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# Relationship Between Cultural Vulnerability Factors and Quality of Life in Ethnically Diverse Prostate Cancer Survivors

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UNIVERSITY OF MIAMI

RELATIONSHIP BETWEEN CULTURAL VULNERABILITY FACTORS  
AND QUALITY OF LIFE IN ETHNICALLY DIVERSE  
PROSTATE CANCER SURVIVORS

By

Natalie Escobio Bustillo

A DISSERTATION

Submitted to the Faculty  
of the University of Miami  
in partial fulfillment of the requirements for  
the degree of Doctor of Philosophy

Coral Gables, Florida

August 2014

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Relationship Between Cultural Vulnerability Factors  
and Quality of Life in Ethnically Diverse  
Prostate Cancer Survivors

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Disparities in quality of life outcomes have been found among ethnically diverse prostate cancer survivors following prostate cancer treatment. Quality of life disparities have been traditionally explained by ethnic group membership and socioeconomic disadvantages. The examination of cultural vulnerability factors, such as cancer fatalism and medical mistrust, which are prevalent in minority ethnic groups, may offer a more comprehensive assessment of ethnic disparities as they have been found to negatively impact health beliefs and behaviors (e.g., poorer screening rates). However, few studies have examined the impact of these cultural values on quality of life following a prostate cancer diagnosis. The present study aimed to evaluate whether cultural vulnerability factors (i.e., cancer fatalism and medical mistrust) mediated the relationship between ethnic group membership and general quality of life indexes (i.e., physical and emotional well-being) among PC survivors prior to receiving PC-related treatment.

Participants were 268 ethnically diverse men (30% African American, 29% Hispanic, and 41% non-Hispanic White) who were on average 63.42 years old (SD=7.83), had received a prostate cancer diagnosis, and had not initiated prostate cancer-related treatment. Path analysis was used to examine: 1) the relationship between ethnic group membership and pre-treatment quality of life; 2) the relationship between

ethnic group membership and cultural vulnerability factors; 3) the relationship between cultural vulnerability factors and pre-treatment quality of life; and 4) whether cultural vulnerability factors mediated the relationship between ethnic group membership and pre-treatment quality of life.

Results indicated that ethnic group membership was not significantly associated with physical and emotional well-being. Hispanic men did report greater levels of cancer fatalism compared to non-Hispanic White men ( $\beta = .15, p = .03$ ), and both Hispanic ( $\beta = .19, p < .01$ ) and African American ( $\beta = .20, p < .01$ ) men reported greater levels of medical mistrust compared to non-Hispanic White men. Across the entire sample, cancer fatalism was not related to physical ( $\beta = -.12, p = .06$ ) or emotional ( $\beta = -.10, p = .11$ ) well-being. However, greater levels of medical mistrust were significantly associated with poorer physical ( $\beta = -.14, p = .03$ ) and emotional ( $\beta = -.13, p = .04$ ) well-being. In addition, a significant total indirect relationship between ethnicity and emotional well-being ( $\beta = -.04, p = .04$ ) via greater levels of cancer fatalism and medical mistrust was found when comparing Hispanic and non-Hispanic White men. These associations held after controlling for relevant covariates (i.e., age, subjective social status, language preference, perceived support from the family, religious behavior, PSA level at diagnosis, time since diagnosis, and comorbid medical conditions).

The results suggest a role for cancer fatalism and medical mistrust as they relate to pre-treatment quality of life, particularly emotional well-being. Identification of culturally relevant correlates of quality of life has implications for developing interventions that may promote adjustment in this population. Future studies should

examine the relationship between ethnic group membership, cancer fatalism, medical mistrust, and emotional well-being in longitudinal designs.

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## Chapter 1: Introduction

### *Prostate Cancer*

Prostate cancer (PC) is the most commonly diagnosed non-skin cancer in American men. The American Cancer Society estimates that 238,590 cases of PC will be diagnosed in 2013 (ACS, 2013). Approximately one in six men will be diagnosed with PC in his lifetime and one in 36 will die of PC (ACS, 2013). PC is the second leading cause of cancer-related death in American men with 29,720 men estimated to die in 2013 due to the disease.

Screening techniques are available to diagnose PC before it causes any symptoms. Screening methods include a combination of a prostate specific antigen (PSA) test and a digital rectal exam (DRE). One of the benefits of screening is that it may help detect cancer at an early stage, when there is a greater likelihood of curing the disease. Because of the higher frequency of engaging in screening procedures, more men are being diagnosed with early stage PC. However, screening techniques are not 100% accurate. An abnormal screening result must be followed up with a prostate biopsy in order to confirm a PC diagnosis. Biopsies are invasive procedures, but when cancer is found, they provide valuable information regarding the grade and stage of the cancer. The grade refers to how aggressive the PC tumor is, while the stage indicates the degree to which the cancer has spread. Both grade and stage are important markers in the treatment decision process.

Fortunately, the vast majority of men are diagnosed with early stage PC that is highly treatable. The relative 5-year, 10-year, and 15-year survival rates (i.e., compares survival rates of individuals diagnosed with cancer to those expected for cancer-free

individuals) for men diagnosed with PC are near 100%, 98%, and 93%, respectively (ACS, 2013). In contrast, the prognosis of PC diagnosed at an advanced stage is markedly worse, with a 5-year survival rate at approximately 28% (ACS, 2013).

Due to the available treatment options, men are likely to live a long time after they are diagnosed with PC. Various curable treatment options exist for early stage PC (National Cancer Institute, 2013; NCI). The most common treatments include radical prostatectomy and radiation therapy. Although curative, radical prostatectomy and radiation therapy are coupled with side effects, such as urinary, bowel, and sexual dysfunction. Another available treatment option for early stage PC is active surveillance (NCI, 2013).

Active surveillance is a type of clinical management that involves monitoring the status of the disease and delaying active treatment until there is clinical evidence of disease progression (Thompson et al., 2007). The advantage of active surveillance is the avoidance of treatment-related side effects until deemed clinically necessary. While the availability of screening techniques has resulted in earlier detection of PC, it has also contributed to a greater likelihood of treating PC that would not have caused any threat to the individual's mortality (Etzioni et al., 2002; Shao et al., 2010). This is significant because men are undergoing aggressive treatments and experiencing treatment-related side effects for indolent tumors. Because of the benefit of delaying treatment side effects while maintaining the ability to undergo an active treatment after clinical progression, more men diagnosed with early stage PC may be given the option to undergo active surveillance (Soloway et al., 2007). Although treatment-related side effects are delayed, men are faced with living with an active cancer.

### *Ethnic Disparities in Prostate Cancer*

Incidence rates for PC vary by ethnic group. According to Surveillance Epidemiology and End Results (SEER) data from 2005-2009, Hispanic men had the lowest PC incidence rate at 125.9 per 100,000 men, followed by non-Hispanic White men at 146.9 per 100,000 men, and African American men had the highest PC incidence rate at 236.0 per 100,000 men (NCI, 2012). Similarly, SEER data show that PC mortality rates also vary by ethnic group. For PC survivors who passed away between 2005 and 2009, mortality rates were 17.8 per 100,000 for Hispanic men, 21.7 per 100,000 non-Hispanic White men, and 53.1 per 100,000 African American men (NCI, 2012).

As demonstrated by the SEER data, African American men have the highest PC incidence and mortality rates compared to men from other ethnic groups. African American men also have a lower 5-year relative survival rate (i.e., 96.2%) compared to White men (99.6%; Siegel, Naishadham, & Jemal, 2012). It is estimated that 35,110 cases of PC were diagnosed among African American men in 2011, accounting for 40% of all cancer diagnoses in this ethnic group (ACS, 2012). Whereas it is estimated that one in six American men will be diagnosed with PC in his lifetime, the number increases to one in five men when examining African Americans alone (ACS, 2012). The death rate due to PC is 2.4 times higher in African American men compared to White men (ACS, 2012). PC is less prevalent in Hispanic men compared to African American and non-Hispanic White men. PC is the fourth leading cause of cancer-related death among Hispanic men (ACS, 2009).

Although the majority of cancers are diagnosed at early stages, Hispanics and African Americans are more likely than non-Hispanic Whites to be diagnosed at a non-

localized stage of disease. The reasons for the ethnic disparities are unclear. Low socioeconomic status, lack of access to health care, and inadequate health insurance coverage have been proposed as barriers to engaging in PC screening and receiving timely diagnoses in African Americans (NCI, 2008). Access to screening, early detection, and timely treatment are examples of factors that contribute to racial disparities in mortality (Siegel, Naishadham, & Jemal, 2012).

### *Quality of Life*

Given the high 5-year relative survival rates in PC survivors, it is important to examine the health-related quality of life of these individuals. In the cancer literature, health-related quality of life is comprised of two broad dimensions: disease-specific and general quality of life. Disease-specific quality of life in PC refers to side effects associated with the diagnosis and treatment of PC. The commonly investigated dimensions of PC-specific quality of life include urinary, bowel, and sexual function. This dimension of quality of life assesses how well men are able to function within each PC-related symptom domain as well as how bothered they are by their ability or lack of ability to function in each domain. General quality of life refers to how well the person is functioning across a variety of psychosocial domains. Specifically, physical, social/family, emotional, and functional well-being comprise general quality of life (Cella, 1994). Physical well-being taps into disease-induced bodily symptoms (e.g., experiencing nausea or pain), social/family well-being refers to perceived support from family and friends, emotional well-being taps into psychological symptoms (e.g., feeling

sad or worried), and functional well-being refers to the ability to conduct activities of daily living and maintain social roles.

The current PC literature has extensively studied health-related quality of life outcomes following PC-related treatment. Men who undergo radical prostatectomy experience decrements in urinary function (e.g., incontinence), both associated with urinary symptoms, and impotence (Kao et al., 2000). Radiation therapy is also associated with decrements in disease-specific quality of life, most notably urinary urgency, bowel urgency, and decreased level of interest and satisfaction with sex (Dale et al., 1999).

However, less is known about general quality of life following a PC diagnosis prior to receiving treatment. It is important to examine pre-treatment quality of life as a new cancer diagnosis may be a stressful experience as men engage in the treatment decision process. Baseline levels of health-related quality of life have been found to predict satisfaction with care following PC treatment (Resnick et al., 2012). Therefore, pre-treatment general quality of life may have implications for post-treatment outcomes. In addition, more men are undergoing active surveillance and may delay active treatment onset or never receive active treatment. However, anxiety is a predictor of receiving treatment without evidence of disease progression in men undergoing active surveillance (Latini et al., 2007). Understanding the emotional well-being of a PC survivor undergoing active surveillance may help identify individuals at risk for experiencing unnecessary treatment-related side effects.

Reeve et al. (2009) conducted a study to aid in addressing the current gap in understanding the impact of cancer on quality of life by comparing quality of life levels prior to cancer diagnosis to those following a variety of cancer diagnoses (e.g., prostate,

breast, colorectal, or lung cancer). The authors found statistically significant decreases in physical well-being among all cancer types following diagnosis. However, when assessing change in mental well-being, significant declines were only found in individuals who received a lung, colorectal, or PC diagnosis. The changes in quality of life outcomes among cancer survivors were compared to those of control subjects. Prior to diagnosis, no differences were found in the quality of life levels between cancer survivors and the control group. These findings suggest that a PC diagnosis may result in decrements in physical and emotional well-being. Similarly, Halbert et al. (2010) suggested physical and emotional well-being are the most relevant domains of general quality of life following a PC diagnosis.

#### *Ethnic Group Differences in Quality of Life*

Previous studies have examined quality of life of ethnically diverse cancer survivors after receiving treatment. In the breast cancer literature, ethnic group differences have been found among breast cancer survivors. One study found that African American and Hispanic women reported lower physical well-being when compared to non-Hispanic White women (Arcia, Skinner, Bailey, & Correa, 2001). In the same study, African American women reported greater emotional well-being compared to non-Hispanic White women, while Hispanic women experienced the lowest levels of emotional well-being compared to all groups. The findings from this study suggest that ethnic minority women may be more vulnerable to experiencing poorer quality of life compared to non-Hispanic White women, particularly Hispanic women. Although the

study found that African American women reported the highest levels of emotional well-being, they are still at risk for decrements in physical well-being.

The finding that Hispanic women reported lower quality of life compared to non-Hispanic White women is also supported by Yanez, Thompson, and Stanton (2011). The authors conducted a review of the literature and found that Hispanic women were more likely to report poorer mental, physical, and social quality of life compared to non-Hispanic White women. Furthermore, in a study examining quality of life within two months after receiving a breast cancer diagnosis, minority ethnic group membership was associated with lower physical well-being and overall quality of life (Kwan et al., 2010). When levels of quality of life were compared between Hispanic and African American women, Hispanic women reported lower overall quality of life. The authors argued that long-term quality of life of breast cancer survivors could be impacted by the emotional and physical functioning at the time of diagnosis and should therefore be considered in addition to quality of life concerns related to treatment (Kwan et al., 2010).

Ethnic group differences in general quality of life have also been found among PC survivors who have received treatment. Penedo, Dahn, Shen, Schneiderman, and Antoni (2006) examined post-treatment quality of life among non-Hispanic White, African American, and Hispanic men and sought to explain disparities in quality of life outcomes. The authors found that African American and Hispanic men reported lower general quality life than non-Hispanic White men and identified greater medical comorbidity, lower physical activity, and poorer sleep functioning in ethnic minority men as mediators of the relationship between ethnic group membership and quality of life. The previous study highlights the need to understand quality of life disparities and offers explanations

for ethnic group differences above and beyond traditional sociodemographic risk factors by also examining health behaviors.

In a different study comparing quality of life outcomes among Hispanic, African American, and non-Hispanic White men diagnosed and treated for PC, significant differences were found in level of physical functioning between Hispanic and non-Hispanic White men. Hispanic men reported poorer physical, sexual, and bowel functioning as well as greater bother associated with bowel dysfunction (Krupski et al., 2005). African American men have also reported significantly lower levels of physical functioning compared to non-Hispanic White men following cancer treatment in PC samples (Eton, Lepore, & Helgeson, 2001) as well as in samples with mixed cancer diagnoses (Rao, Debb, Blitz, Choi, & Cella, 2008). However, one study found no ethnic differences in physical quality of life outcomes in PC survivors post-treatment, suggesting an inconsistency in physical well-being outcomes in the literature (Halbert et al., 2010).

A few studies have examined quality of life outcomes in African American and non-Hispanic White men in longitudinal designs. One study found that prior to PC treatment, African American men reported lower levels of general and disease-specific quality of life compared to those of non-Hispanic White men even after controlling for age, education, and income (Lubeck et al., 2001). Although quality of life increased for all men following treatment irrespective of ethnicity, the rates of improvement in general and disease-specific functioning were lower among African American survivors compared to non-Hispanic White survivors. The study's findings suggest poorer outcomes for African American PC survivors as well as a delay in returning to pre-

treatment quality of life levels after treatment. Jayadevappa, Johnson, Chhatre, Wein, and Malkowicz (2007) demonstrated similar findings, where African American men reported lower levels of quality of life at diagnosis (prior to PC treatment) and required a longer time to return to pre-treatment quality of life scores compared to non-Hispanic White men. This study also found that African American ethnicity was associated with lower physical and emotional functioning following PC diagnosis. This finding supports the notion that ethnic differences in quality of life may be present prior to PC treatment. However, the mechanisms explaining the ethnic differences remain to be explored.

More research is needed regarding pre-treatment quality of life in ethnic minorities. Due to the high incidence and mortality rates among ethnic minorities and the potential impact of health-related quality of life decrements following a PC diagnosis, it is important to assess ethnic group differences in quality of life in newly diagnosed PC survivors. Although qualitative studies have provided preliminary information regarding the psychosocial impact of a cancer diagnosis in ethnically and socioeconomically diverse backgrounds (e.g., Ashing-Giwa et al., 2004), it is necessary to conduct quantitative studies to gain a better understanding of quality of life disparities at diagnosis.

Furthermore, when examining general quality of life disparities in ethnic minorities, it is important to assess individual components of quality of life (Halbert et al., 2010; Reeve et al., 2009). Previous studies have found total general quality of life scores to be positive, but found differences among subscale scores. For example, Ashing-Giwa, Ganz, and Petersen (1999) found varying levels of physical, social, and sexual functioning when examining specific dimensions of quality of life, with greatest

indication of sexual concerns; however, found positive overall quality of life scores among African American and non-Hispanic White breast cancer survivors as measured by the RAND SF-36 General Health Perceptions Scale (Hays, Sherbourne, & Mazel, 1993). Study mean levels of overall quality of life were comparable to national norms (66.32 vs. 64.59, respectively; Ashing et al., 1999). Individual components of quality of life may be more sensitive in capturing the quality of life of cancer survivors.

### *Demographic, Cultural, and Medical-Related Correlates of Quality of Life*

Demographic variables. Various sociodemographic variables have been found to impact quality of life in cancer patients. One correlate of quality of life is age. Older age has been associated with poorer physical, emotional, social/family well-being in cancer populations (Arcia et al., 2001; Reeve et al., 2009). Subjective social status has also been found to be associated with low self-rated health and higher levels of depression (Adler et al., 2008). Subjective social status refers to an individual's perceived standing in society and has been found to predict health-related outcomes above and beyond traditional indicators of socioeconomic status, such as income and education (Cundiff, Smith, Uchino, & Berg, 2013). Cundiff et al. argue that low subjective social status may be a risk factor for poorer health outcomes due to its association with fewer psychosocial resources and greater perceived stress and emotional distress. Relative social status has a greater likelihood of impacting psychosocial pathways related to health as individuals make comparisons of their socioeconomic situation to that of other individuals they know, thus making it a more meaningful measure of deprivation level (Wilkinson, 1997).

Cultural variables. Acculturation has also been associated with general quality of life in studies that include an ethnically diverse sample, with higher levels being related to better quality of life (Kwan et al., 2010). Greater levels of acculturation among Hispanic individuals is related to greater use of preventative services, such as cancer screening, better perceived health status, and greater likelihood of health insurance coverage (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). Low levels of acculturation in Hispanic breast cancer survivors have been related to poorer functional well-being, greater number of breast cancer concerns, and lower use of healthcare services (Arcia et al., 2001). Low levels of acculturation have also been associated with negative outcomes among African Americans, such as greater use of maladaptive coping techniques and higher levels of depression (Kimbrough, Molock, & Walton, 1996; Klonoff & Landrine, 2000; Landrine & Klonoff, 1996). Given these findings, level of acculturation should be examined when assessing quality of life in ethnic minorities.

High variability exists in the way acculturation has been measured in research studies. While some studies have used number of years living in the United States or language as a measure of acculturation, others have used more comprehensive measures including cultural-specific behaviors (e.g., food, music, and television preferences) and values (Kwan et al., 2010; Marin, 1992; Lara et al., 2005). Although measures that tap into various cultural components may serve as a better indicator of an individual's level of acculturation, language has been found to explain the majority of the variance in acculturation (Marin, 1992).

In addition, culturally-relevant factors have been associated with quality of life outcomes. For example, religious practices have been used by ethnically diverse women

as a coping mechanism to deal with breast cancer (Ashing-Giwa et al., 2004; Lopez-Class, Perret-Gentil, Kreling, Caicedo, Mandelblatt, & Graves, 2011). Religiosity and spirituality have been associated with improved levels of social and functional well-being among Hispanic breast cancer survivors (Wildes, Miller, San Miguel de Majors, & Ramirez, 2009). However, findings related to the effects of religiosity on quality of life have been mixed. Whereas some studies have found that religiosity did not have a significant effect on physical or emotional well-being, others have found that religious activity was associated with fewer symptoms of depression among Black cancer survivors (e.g., Halbert et al., 2010; Musick, Koenig, Hays, & Cohen, 1998). Despite the discrepancies, religiosity is an important factor to consider when evaluating quality of life outcomes among ethnically diverse men as it is an often used source of coping to reduce cancer-related worry and anxiety (Hamilton, Powe, Pollard, Lee, & Felton, 2007).

Familism, which emphasizes mutual support from family members, is another culture-specific factor that is related to well-being (Sabogal, Marin, Otero-Sabogal, 1987). Qualitative studies have shown that familism may impact quality of life both positively and negatively (Ashing-Giwa et al., 2004; Lopez-Class, Perret-Gentil, Kreling, Caicedo, Mandelblatt, & Graves, 2011). Breast cancer survivors have reported beneficial effects of familism as it relates to the support provided by their family members. Non-Hispanic White women most frequently identify their spouses as their main source of support, while ethnic minority women identified members of their immediate and extended families as their greatest source of support (Ashing-Giwa et al., 2004). Although perceived support from the family is associated with positive well-being, Hispanic women in particular, reported that family was also a source of stress in that they

worried about discussing their health with their loved ones as they did not want them to burden them (Lopez-Class et al., 2011). Worry about the impact the cancer diagnosis may have on their children and loved ones deterred them from speaking about their illness and seeking support.

Medical variables. Medical-related variables are also associated with quality of life, particularly among PC survivors. For example, lower levels of PSA have been associated with lower levels of distress (Diefenbach, Mohamed, Horwitz, & Pollack, 2008). Less time since a cancer diagnosis has been associated with lower physical quality of life (Matthews, Tejada, Johnson, Berbaum, & Manfredi, 2012). In addition, having greater medical comorbidities has been associated with poorer quality of life outcomes (Arcia et al., 2001). Specifically, higher comorbidity is related to poorer physical and mental well-being in long-term cancer survivors (Reeve et al., 2009; Zebrack, Yi, Petersen, & Ganz, 2008). Matthews et al. (2012) found that having as few as one to two medical comorbidities was associated with lower physical quality of life among cancer survivors. The findings suggest that these sociodemographic and medical variables should be accounted for when examining quality of life in PC survivors.

#### *Ethnicity vs. Race*

Ethnicity is a construct influenced by culture (Whaley, 2003). Culture refers to a shared set of attitudes, beliefs, values, and practices that are transmitted from generation to generation (Whaley, 2003). Individuals self-identify with a particular ethnic group based on their sense of belonging to that group (e.g., customs and language spoken).

Ethnicity and race are often used interchangeably. However, racial identity is imposed by

society based on physical characteristics, such as skin color, hair texture, facial form, and eye shape (Jones, 2001). The current study is interested in the ethnicity construct rather than race as it may be a more salient variable in the interpretation and adjustment to a cancer diagnosis.

### Hispanics

The Hispanic population is the fastest growing group in the United States with an increase of 15.2 million individuals between 2000 and 2010 (Humes, Jones, & Ramirez, 2011). As defined by the United States 2010 census, Hispanic origin is viewed as the “heritage, nationality group, lineage, or country of birth of the person or person’s parents or ancestors before their arrival in the United States” (Humes, Jones, & Ramirez, 2011). A Hispanic person is one who is of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish origin and can be of any race. The Hispanic ethnic group consists of a variety of countries of origin, making it a highly heterogeneous group. Although each Hispanic subgroup has its own variations in customs, foods, and practices, they all share a common language and values that serve to unify this group. Hispanic individuals share values such as, familism (i.e., perceived support from and obligations to the family), simpatia (i.e., the need to minimize confrontation), and traditional gender roles (Marín & Marín, 1991). Although acculturation may play a role in the extent to which Hispanic individuals hold these values, research has shown that some values are maintained even among those who are highly acculturated. For example, Sabogal, Marín, Otero-Sabogal, Marín, and Perez-Stable (1987) found that levels of perceived support from the family did not vary by level of acculturation. The cultural values shared by all descendants of Hispanic origin serve to unify this ethnic group.

### African Americans

African American can refer to an ethnic group as well as a race. The United States 2010 census only provided the option to indicate African American status as a race and instructed individuals to choose that option if they had “origins in any of the Black racial groups of Africa” (Humes et al., 2011). However, the current study will conceptualize African American as an ethnic group rather than a race in order to capture the shared cultural values transmitted among individuals of African descent. It is important to note that this is also a heterogeneous group as individuals may identify with heritage from other countries, such as Jamaica or Haiti, whose inhabitants are predominantly of African descent. The emphasis of the current study is on the traditions and values that are passed from generation to generation rather than solely focusing on the color of a person’s skin.

### *Stigma Associated with Cancer*

Cancer-related stigma is associated with greater illness-related stress and affects quality of life outcomes by creating a perception that the survivor is different from cancer-free individuals and increasing feelings of alienation (Fife & Wright, 2000). When an individual is diagnosed with cancer, fear of cancer may lead others to blame the patient for having done something to cause the illness as a way to decrease their own feelings of vulnerability and thoughts about their own mortality (Fife & Wright, 2000). In ethnic minority cultures, where collectivism is valued and fatalistic attitudes are more common, stigma may play a significant role as it relates to the cancer experience. Because cancer is often viewed as a death sentence, individuals diagnosed with cancer may isolate themselves from their family and friends in an effort to protect their loved

ones from emotional or financial burden (Hamilton, Moore, et al., 2010; Wray et al., 2009; Lopez-Class et al., 2011). Stigma also exists in the way members of an individual's social network may respond to a cancer diagnosis with pity or feeling sorry (Hamilton, Deal, Moore, Best, Galbraith, & Muss, 2013). This may result in the withholding of information related to the diagnosis and further contribute to social isolation when support is most greatly needed. Although cancer mortality rates have decreased over the years as screening procedures and treatments have improved, perceptions of cancer resulting in death persist among African Americans (Swinney & Dobal, 2011).

### *Cultural Vulnerability Factors*

Culturally relevant psychosocial factors are important to examine, particularly when assessing health outcomes of ethnic minority populations. Traditionally, ethnic disparities have been explained based on ethnic group membership and socioeconomic disadvantages. However, it is important to consider the impact of cultural factors on health outcomes beyond traditional socioeconomic risk factors such as low income, poor education, and lack of access to health care. Whereas some culturally-relevant factors (e.g., religiosity and perceived support from the family) are associated with positive health outcomes, cancer fatalism and medical mistrust are psychosocial constructs held by many Hispanic and African American individuals and have been shown to negatively impact health by way of influencing health beliefs, assumptions, and behavior (Odedina et al., 2011). The assessment of culturally relevant psychosocial factors offers a more comprehensive understanding of ethnic health disparities. The current study will evaluate

two cultural vulnerability factors (i.e., cancer fatalism and medical mistrust) in the context of quality of life of PC survivors.

### Cancer Fatalism

Cancer fatalism is the belief that a diagnosis of cancer will inevitably result in death (Powe, 1995). Individuals who are fatalistic view cancer as an uncontrollable illness and are less likely to find hope following a diagnosis (Powe & Johnson, 1995). Minority populations, such as African Americans and Hispanics are more likely to endorse higher levels of cancer fatalism compared to non-Hispanic White individuals (Facione, Miaskowski, Dodd, & Paul, 2002; Mayo, Ureda, & Parker, 2001; Phillips, Cohen, & Moses, 1999; Shankar, Selvin, & Alberg, 2002). Cancer fatalism has been identified as a barrier to the screening, detection, and treatment of cancer (Powe & Finnie, 2003) even after controlling for age, education, and income (Powe, 1995).

African Americans are less likely to participate in early detection screenings for cancer compared to non-Hispanic Whites (Powe, 1995). Although poor cancer-related knowledge has been associated with lower rates of screening, African Americans with high levels of fatalism remained less likely to undergo screening procedures even after the provision of cancer-related education (Powe, 1995). The finding that cancer information did not increase screening behavior provides evidence that fatalism may explain lower screening behaviors among African Americans above and beyond knowledge. Further support for the role of fatalism in cancer screening behavior is provided by a study that compared the prostate and colorectal cancer screening behaviors of Hispanic and African American men. Investigators found that Hispanic men had greater cancer-related knowledge. Despite the greater levels of knowledge, Hispanic men

endorsed higher levels of cancer fatalism compared to African American men suggesting that greater knowledge did not result in lower fatalism (Powe et al., 2009).

Higher levels of cancer fatalism in Hispanic women have also impacted screening behavior in this population (Chavez, Hubbell, Mishra, & Valdez, 1997). In a study that examined the relationship between mammography screening and levels of cancer fatalism among low-income Mexican American women, it was found that women who engaged in regular mammography screenings reported significantly lower levels of cancer fatalism compared to women who infrequently underwent mammograms (Lopez-McKee, McNeill, Bader, & Morales, 2008). The findings from this study are significant as they showed that even after accounting for socioeconomic status (i.e., all women were recruited based on low-income status), differences were seen in rates of mammography based on level of fatalism. Although there is support for infrequent screening due to lack of economic resources, the previous study suggests cultural values, such as fatalism, may also contribute to poorer screening behaviors.

Avoidance of cancer screening due to fatalistic beliefs is rational as screening is viewed as fruitless; the belief holds that a cancer diagnosis will result in death regardless of when in the disease process it is found (Straughan & Seow, 1998). Poorer screening relates to more advanced disease and ultimately greater chance of experiencing compromised quality of life (Zambrana, Breen, Fox, & Gutierrez-Mohamed, 1999). To date, most studies have addressed cancer fatalism as it relates to cancer screening behavior rather than its impact post cancer diagnosis. These studies have been conducted primarily among women as pertains to breast, cervical, and colorectal cancer screening, while fewer studies have been conducted among men.

Although the role of cancer fatalism as it relates to cancer screening has been well developed in the literature, a gap remains in understanding the impact of fatalism on quality of life outcomes among cancer survivors. Evidence for a link between cancer fatalism and quality of life is provided by a study that found greater levels of cancer fatalism were associated with lower levels of self-efficacy (Straughan & Seow, 1998). In addition, higher levels of cancer fatalism have been associated with more avoidance of cancer information (Miles, Voorwinden, Chapman, & Wardle, 2008). The greater avoidance of information may deprive individuals of learning about information that may provide hope toward the fight against the illness. For example, a fatalistic view about PC may deprive individuals about learning PC-related facts such as it tends to be a slow-growing disease, has a variety of effective treatment options, and has a high survival rate. The lack of receiving positive information may perpetuate negative feelings and sustain fatalistic views.

The role of cancer fatalism in quality of life outcomes among cancer survivors would benefit from being investigated, particularly among men newly diagnosed with PC given the prevalence of this disease. Previous research suggests that cancer fatalism may be highest following a cancer diagnosis. For example, investigators found that Hispanic breast cancer survivors endorsed the highest levels of cancer fatalism near the time of diagnosis and dissipated over time (Lopez-Class et al., 2011). No study has assessed the relationship between fatalism and general quality of life outcomes in men diagnosed with PC prior to receiving treatment.

### Medical Mistrust

Medical mistrust refers to a tendency to distrust healthcare systems and health-related providers (Thompson, Valdimarsdottir, Winkel, Jandorf, & Redd, 2004). It is accompanied by a lack of confidence in the treatments and information offered by the healthcare system, particularly when the medical provider belongs to a different ethnic group than the patient (Cronan et al., 2008). Medical mistrust is a multi-dimensional construct that encompasses suspicion of medical systems and healthcare workers as well as expectations of being treated unfairly by medical personnel. It is also characterized by perceptions about providers' abilities to treat medical illnesses and about the level of perceived support they will receive from providers (Hall, Dugan, Zheng, & Mishra, 2001; Thompson et al., 2004). The most frequently attributed source of medical mistrust in African Americans is the Tuskegee syphilis experiment, which took place between 1932 and 1972 (Gamble, 1997). African American men who participated in the Tuskegee experiments were never told they had syphilis nor were they provided treatment even after penicillin was identified as an effective treatment for syphilis.

Medical mistrust is related to lower screening behaviors and less satisfaction with care (Altice, Mostashari, & Friedland, 2001). Among African American men, it has served as a barrier to help-seeking behavior and adherence to recommended health behaviors (Hammond, 2010; Shelton et al., 2010). Greater medical mistrust is associated with having fewer recent visits with a physician, less likelihood of having a regular provider, and not visiting a provider in the past year (Blankenau, Boye-Beaman, & Mueller, 2000; Strain, 1991). Distrust of the medical system is related to the lack of willingness to seek medical care for prevention and treatment-related purposes, lack of

adherence to treatment recommendations, and greater negative health-related attitudes (Balkrishnan, Dugan, Camacho, & Hall, 2003; LaVeist, Nickerson, & Bowie, 2000; Trachtenberg, Dugan, & Hall, 2005). Conversely, greater trust in the health care system has been associated with greater use of preventative services among African American women (O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004).

Individuals with greater medical mistrust may have greater doubts about the benefits and effectiveness of cancer screening and therefore may be less likely to undergo such procedures (Matthews, Sellergren, Manfredi, & Williams, 2002). This has implications for health as lack of cancer screening is related to greater risk of being diagnosed with an advanced cancer that is less treatable.

Medical mistrust has been found to be higher among men than in women, particularly among older African American men (Altice et al., 2001; Fiscella, Franks, & Clancy, 1998; Hammond, 2010). Medical mistrust among African Americans is often perpetuated by frequent exposure to negative medical experiences, which leads them to perceive greater risk associated with engagement in routine medical care (Hammond, 2010). The experience and expectation of negative outcomes further drives levels of medical mistrust.

It is well documented in the literature that African Americans are more likely to report higher levels of medical mistrust than non-Hispanic White individuals (LaVeist, Nickerson, & Bowie, 2000). However, it has also been demonstrated that Hispanics endorse high levels of medical mistrust as well. In a study that compared levels of medical mistrust among African American Hispanic, and non-Hispanic White women as it pertained to breast cancer screening practices, non-Hispanic White women reported the

lowest levels of medical mistrust, followed by African American women, and Hispanic women endorsed the highest levels of medical mistrust (Cronan et al., 2008). This finding is further evidenced by a different study that found monolingual-Spanish Hispanic women reported higher levels of medical mistrust compared to African American women (Thompson et al., 2004). In the same study, Hispanic women with low levels of acculturation had the highest levels of medical mistrust. Greater medical mistrust was associated with less breast cancer screening (Thompson et al., 2004). Medical mistrust is relevant to the well-being of both African Americans and Hispanics.

The few studies available examining medical mistrust in cancer populations have focused on identifying sociodemographic predictors of medical mistrust such as, education, income, and access to healthcare (Halbert et al., 2009). However, the impact of medical mistrust on the quality of life of cancer survivors is not well developed. In an ethnically diverse sample of women diagnosed with and treated for breast cancer, lower levels of medical mistrust and non-Hispanic White ethnicity were associated with better quality of life (Maly, Stein, Umezawa, Leake, & Anglin, 2008). The relationship between minority ethnic group membership (i.e., African American and Hispanic) and quality of life was partially mediated by medical mistrust, where minorities endorsed greater levels of medical mistrust and experienced poorer quality of life. Contrary to previous findings, African American women reported the greatest level of medical mistrust followed by Hispanic women. Medical mistrust had effects on decreased feelings of self-efficacy and less positive coping, which were both related to lower quality of life independent of socioeconomic status, cancer stage, and number of medical comorbidities.

It is unknown whether greater levels of medical mistrust also place men at risk for experiencing poorer quality of life after a cancer diagnosis. Talcott et al. (2007) found that among men diagnosed and treated for cancer, African American men endorsed higher levels of medical mistrust and greater suspicion that doctors were more concerned about reducing costs than about their health compared to non-Hispanic White men. This finding suggests that medical mistrust may persist after a cancer diagnosis and possibly impact quality of life. Further research is needed to understand the relationship between medical mistrust and quality of life among ethnically diverse men diagnosed with PC.

#### *Rationale for the Current Study*

Understanding the quality of life of PC survivors is important given the high 5-year relative survival rates (i.e., 96-100%) of the disease across ethnic groups (ACS, 2013). However, few studies have examined the quality of life of ethnically diverse PC survivors. One study that examined quality of life in a sample of ethnically diverse men after receiving PC treatment found that Hispanic and African American men reported lower quality of life compared to non-Hispanic White men (Penedo et al., 2006). The study identified several socio-demographic, medical, and health behavior factors that significantly accounted for the relationship between ethnic group membership and quality of life. This study made notable contributions to the existing quality of life literature by including a large sample of ethnic minority participants, highlighting ethnic disparities in quality of life following PC treatment, and demonstrating that factors beyond traditional indicators of socioeconomic status (e.g., income, education, and access to healthcare)

contribute to disparities in quality of life between ethnic minorities and non-Hispanic White men.

However, a gap remains in the literature regarding the quality of life of ethnically diverse men prior to receiving PC-related treatment. The current study sought to examine pre-treatment quality of life as this information may be used to assess whether quality of life disparities are evident prior to treatment. In addition, the current study aimed to identify culturally-relevant correlates of quality of life that may explain disparities in quality of life outcomes. Culture influences an individual's evaluation of well-being (Angel & Thoits, 1987). Angel and Thoits (1987) argue that the subjective experience of illness is bound by culture as sociocultural variables impact an individual's interpretation and response to illness. An individual's awareness to bodily changes, perceived severity of illness, and management of a disease may all be impacted by his culture (i.e., ethnic group). When evaluating physical or emotional well-being, individuals first attend to internal sensory information and use schemas driven by culture to describe their experience (Angel & Thoits, 1987). Because the evaluation of quality of life outcomes is dependent on cultural processes, the current study sought to identify culturally-relevant cognitive factors that may be related to the physical and emotional well-being of PC survivors.

Further support for the present study is provided by the work of Myers (2009) who proposed a comprehensive biopsychosocial model to explain the associations between race/ethnicity and health status. Myers' guiding framework uses the Reserve Capacity Model by Gallo and Matthews (2003) as a pathway to understand these associations. The "Lifespan Biopsychosocial Model of Cumulative Vulnerability and

Minority Health” suggests that individuals that belong to ethnic minority groups are exposed to chronic life stressors from early childhood that predisposes them to long term negative health outcomes (Myers, 2009). Exposure to chronic life stressors (e.g., exposure to discrimination, unsafe neighborhoods, and decreased availability of social mobility) may strain an individual’s “reserve capacity” resources (e.g., social support networks, sense of control, and optimism) and thereby decrease ability to cope with stress and regulate emotion, which may place individuals at risk for engaging in risky health behaviors (e.g., poor diet, excessive alcohol use, and low physical activity) and ultimately lead to poor health outcomes (Myers, 2009; Gallo & Matthews, 2003). The current study examined a portion of these pathways by focusing on how the impact of culture on cognitive structures (e.g., beliefs and attitudes) influences the interpretation of physiological and psychological status (refer to Figure 1).

The current study may make several contributions to the existing literature. First, it aimed to examine quality of life in a sample of African American, Hispanic, and non-Hispanic White PC survivors prior to treatment initiation as a limited number of studies have included all three groups within the same analyses. The current study’s Hispanic sample was unique in that it included men from a variety of Hispanic backgrounds (i.e., Mexican, Central and South Americans, and Caribbean islanders). Furthermore, it aimed to identify correlates of quality of life at diagnosis. Previous studies have examined cancer fatalism and medical mistrust in the context of participation in cancer screening. The current study examined the relationship between cultural vulnerability factors and quality of life in men who had already received a cancer diagnosis. Additionally, this is the first study to examine this relationship in a sample of men that included those who

opted for active surveillance for the management of PC. The inclusion of men undergoing active surveillance sheds light on the pre-treatment processes at play during an increasingly common medical regimen, which has not been widely studied in previous work.

## Chapter 2: Study Aims and Hypotheses

The current study conducted a path analysis to evaluate whether cultural vulnerability factors mediated the relationship between ethnic group membership and quality of life indexes among PC survivors prior to receiving PC-related treatment, controlling for age, subjective social status, language preference, perceived support from the family, religious behavior, PSA level at diagnosis, time since diagnosis, and comorbid medical conditions. The overall model that was examined is shown in Figure 2.

For the current study, the following hypotheses were tested:

Specific Aim 1: To examine the relationship between ethnic group membership and pre-treatment quality of life.

Hypothesis 1a: African American and Hispanic men will each report poorer physical well-being compared to non-Hispanic White men.

Hypothesis 1b: African American and Hispanic men will each report poorer emotional well-being compared to non –Hispanic White men.

Hypothesis 1c: Levels of physical and emotional well-being will not be significantly different between African American and Hispanic men.

Specific Aim 2: To examine the relationship between ethnic group membership and cultural vulnerability factors following a PC diagnosis.

Hypothesis 2a: African American and Hispanic men will each report greater levels of cancer fatalism compared to non –Hispanic White men.

Hypothesis 2b: African American and Hispanic men will each report greater levels of medical mistrust compared to non –Hispanic White men.

Hypothesis 2c: Levels of cancer fatalism and medical mistrust will not be significantly different between African American and Hispanic men.

Specific Aim 3: To examine the relationship between cultural vulnerability factors and pre-treatment quality of life.

Hypothesis 3a: Greater levels of cancer fatalism will be associated with poorer physical well-being among all participants.

Hypothesis 3b: Greater levels of cancer fatalism will be associated with poorer emotional well-being among all participants.

Hypothesis 3c: Greater levels of medical mistrust will be associated with poorer physical well-being among all participants.

Hypothesis 3d: Greater levels of medical mistrust will be associated with poorer emotional well-being among all participants.

Specific Aim 4: To examine whether cultural vulnerability factors mediate the relationship between ethnic group membership and pre-treatment quality of life.

Hypothesis 4a: Cancer fatalism and medical mistrust will mediate the relationship between ethnic group membership and physical well-being, such that African American and Hispanic men will report greater levels of cultural vulnerability factors and poorer physical well-being compared to non-Hispanic White men by way of differences in fatalism and medical mistrust.

Hypothesis 4b: Cancer fatalism and medical mistrust will mediate the relationship between ethnic group membership and emotional well-being, such that African American and Hispanic men will report greater levels of cultural vulnerability factors and poorer

emotional well-being compared to non-Hispanic White men by way of differences in fatalism and medical mistrust.

Hypothesis 4c: The indirect effects between ethnic group membership and physical well-being will not be significantly different between Hispanic and African American men by way of differences in fatalism and medical mistrust, given that levels of cancer fatalism, medical mistrust, and physical well-being will not significantly vary between these groups.

Hypothesis 4d: The indirect effects between ethnic group membership and emotional well-being will not be significantly different between Hispanic and African American men by way of differences in fatalism and medical mistrust, given that levels of cancer fatalism, medical mistrust, and emotional well-being will not significantly vary between these groups.

## Chapter 3: Method

### *Participants*

Participants were enrolled in a study funded by the National Institute of Health (NIH), titled “Ethnicity and Determinants of Quality of Life Following Prostate Cancer Treatment” (NCI grant R01-CA114412). The study’s aim was to examine the impact of ethnic group membership on disease-specific and general quality of life in men diagnosed with PC who were undergoing different forms of treatment. The study sought to understand how ethnically diverse men cope with the diagnosis and treatment of PC and to identify the factors that are associated with their general and disease-specific quality of life. The design of the study called for a total of five psychosocial assessments conducted over a period of 18 to 24 months.

A total of 897 men were screened to participate in the NIH-funded study. Out of all the men that were screened, 370 were ineligible to participate in the study for various reasons (e.g., having a history of cancer other than prostate or skin cancer, treatment initiation prior to study screening, and current alcohol or substance abuse disorder). Of the 527 men that were deemed eligible to participate, 147 refused to enroll. Examples of reasons men elected not to participate in the study included, having a busy work schedule, time constraints, and experiencing comorbid medical conditions. This resulted in 380 that enrolled in the study by signing an informed consent form.

The current study was based on the baseline assessments conducted in the parent study and used a cross-sectional design. Only baseline assessment data, which were collected prior to PC treatment initiation, were included in the statistical analyses. Out of the 380 men who enrolled in the larger study, a total of 273 men completed a baseline

assessment prior to PC-related treatment initiation. An additional 107 men who signed an informed consent form were not included in the present study because they did not complete a baseline assessment due to being withdrawn, dropped, or lost to follow-up (N=32); consented into the study after treatment initiation/completion (N=70); or were missing the baseline assessment (N=5). Of the 273 baseline assessments, data were excluded for two participants that had invalid data and for three participants that self-identified as having “other” ethnicity resulting in the inability to categorize them into one of the three ethnic groups of interest in the current study. Therefore, 268 participants were included in the current study. Refer to Table 1 for a breakdown of recruitment by study site and Table 2 for distribution of ethnic group membership by study site.

#### Inclusion/Exclusion Criteria

Participants were required to be 21 years of age or older and have a diagnosis of PC. Exclusion criteria included: history of cancer other than skin or prostate, completion or initiation of active PC-related treatment (e.g., radical prostatectomy, radiation therapy, cryotherapy, and androgen deprivation therapy), lack of interest in study participation, active psychiatric disorder (e.g., dementia, psychotic disorder, panic disorder, and alcohol/substance dependence disorder), psychotic symptomatology, active suicidal ideation, and severe cognitive impairments as evaluated by the Mini Mental State Exam (MMSE; (Folstein, Folstein, & McHugh, 1975). Although participants that had initiated or completed an active treatment for PC were excluded, those who chose to undergo active surveillance were included in the study. Therefore, all of the current study’s participants were pending active treatment, undergoing active surveillance, or in the treatment decision process at the time data were collected.

In order to ensure that participants comprehended the study's purpose and questionnaires, participants were required to have a sixth grade reading level or higher and be fluent in at least one of the languages the assessments were offered in (i.e., English or Spanish). Provisions were made for men who did not meet the sixth grade reading level criterion. Specifically, a study staff member read all study materials out loud in their entirety and provided the participant with the ability to ask questions that increased their understanding of the purpose of the study, requirements of the study, and participant rights.

The current study used participants' self-reported ethnicity to categorize them as non-Hispanic White, Hispanic, or African American. As noted previously, participants who self-identified as belonging to multiple ethnic groups were not included in the analyses in order to increase the interpretability of the study findings. The ethnic distribution was 29.85% African American, 28.73% Hispanic, and 41.42% non-Hispanic White.

### *Measures*

All study measures were available in English and Spanish. Participants recruited from University of Miami (UM) and Jackson Memorial Hospital (JMH) had the option to complete the assessment in the language of their choice. Due to the larger study's protocol, participants recruited from Bruce W. Carter Department of Veterans Affairs (VA) Medical Center were only given the option to complete assessments in English. A study staff member fluent in Spanish (i.e., reading, writing, and speaking) was available to meet with participants who chose to complete assessments in Spanish. Unless

otherwise noted, an IRB-approved translation company translated the measures included in the study. The translated measures underwent further review by bilingual study staff that had experience working with Hispanic populations, in order to ensure that the translations were an accurate representation of the original (English) measures. Final edits were made to the measures to address Hispanic word use variability. Coefficient alpha was used to assess the internal consistency of the English and Spanish measures, individually. The Appendix contains the English and Spanish versions of all measures included in the study.

#### Control Variables

A comprehensive list of conceptually relevant variables was included in the analyses as covariates of the study's outcome variables.

#### *Sociodemographic Variables*

The study included the following sociodemographic covariates: age, subjective social status, and language preference. A standard socio-demographic questionnaire was used to obtain age information. The MacArthur Scale of Subjective Social Status was used to measure subjective social status (Adler, Stewart, & Group, 2007). The MacArthur scale is comprised of two pictorial-format ladders, each containing 10 rungs. The first ladder asked participants to indicate where they thought they stood relative to other people in their community (i.e., perceived subjective social status within the community). Similarly, the second ladder asked participants to mark where they believed they stood relative to others in the United States (i.e., perceived subjective social status within the country). Each rung is equivalent to one point; therefore, participant scores ranged from

one to 10 on each ladder. Higher placements on the ladders indicated higher social standing. An average score derived from participants' perceived standings in their community and in the country was calculated and used as the measure for subjective social standing the current study. The current study used language preference as a proxy of acculturation level. Language was identified as the one participants chose to complete the assessment (i.e., English or Spanish).

#### *Cultural Protective Factors*

The current study used the Bardis Familism Scale (Bardis, 1959) revised by Sabogal, Marín, Otero-Sabogal, Marín, and Perez-Stable (1987). The 13-item self-report familism scale tapped into three dimensions derived by Sabogal et al. (1987): Familial obligations (i.e., perceived obligation to provide support to immediate and extended family members), Perceived Support from the Family (i.e., perception that family members are available to provide support to solve issues that may arise), and Family as referents (i.e., perception of family as the main source of one's identity). Participants were asked to rate their level of agreement with each statement using a five-point Likert scale ranging from "Very much in disagreement" to "Very much in agreement". Higher scores were indicative of stronger familism values.

The current study used the Perceived Support from the Family subscale as an indicator of familism. The three items that comprise this subscale include: "When someone has problems he/she can count on help from his/her relatives", "When one has problems, one can count on the help of relatives", and "One can count on help from his/her relatives to solve most problems". Sabogal et al. (1987) suggests that the Perceived Support from the Family dimension is the central component of Hispanic

familism value due to its lack of impact by level of acculturation. Whereas the strength of the values of Familial obligations and Family as referents reduces as levels of acculturation increase, Perceived Support from the Family remains unchanged. Perceived Support from the Family is also shown to be independent of country of birth, generation, and location of upbringing. Sabogal et al. found no differences on this dimension among Hispanic subgroups compared to the other familism dimensions that were affected by country of origin. These findings provide support for the current study's use of the subscale as a measure of cultural resilience. The Perceived Support from the Family subscale demonstrated adequate psychometric properties and internal consistency in the current study for English and Spanish versions combined (i.e., Cronbach's alpha= .83) as well as for the Spanish version alone (i.e., Cronbach's alpha= .84).

The Ironson-Woods Spirituality/Religiousness (SR) Index short form was used to assess religiosity (Ironson et al., 2002). The Ironson-Woods Spirituality/Religiousness (SR) Index short form is a 22-item self-report questionnaire that measures both spirituality and religiousness. A factor analysis of the 22 items conducted by Ironson et al. derived four factors: Factor 1: Sense of Peace (Comfort, Strength, Meaning; Feeling a Connection, Less Alone; Existential/Afterlife); Factor 2: Faith in God (View of God; Somatic); Factor 3: Religious Behavior; and Factor 4: Compassionate View of Others (View of Others/Compassion for Others). The larger study from which the current study's data are drawn from only administered the Religious Behavior subscale from the Ironson-Woods Spirituality/Religiousness (SR) Index short form. Therefore, the current study will use the Religious Behavior subscale to assess religiosity.

The Religious Behavior subscale consists of five items that tap into participation in religious rituals and services. Participants indicated their degree of agreement with each statement on a five-point scale ranging from “Strongly disagree” to “Strongly agree”, where higher scores demonstrated greater participation in religious practices. Sample items in this subscale included “I pray or meditate to get in touch with God” and “I participate in religious rituals”. Similar to findings by Ironson et al. (2002) where reliability for the Religious Behavior subscale was adequate (Coefficient alpha= .85), the internal consistency of the subscale was adequate when testing the English and Spanish versions combined (Cronbach’s alpha= .88) as well as the Spanish version alone (Cronbach’s alpha= .88).

#### *Medical-Related Variables*

The following medical-related variables were also included in the analyses: PSA level at diagnosis, time since diagnosis, and comorbid medical conditions. The Charlson Comorbidities Index, which consists of 13 medical conditions yielding a weighted index that accounts for the number and severity of comorbid conditions, was used to assess medical comorbidity (Charlson, Pompei, Ales, & MacKenzie, 1987). In order to obtain PSA level history and time since diagnosis, participants were required to sign an “Authorization for 3<sup>rd</sup> Party Disclosures- Short Form” document (see Appendix). The document provided study staff authorization to access participants’ medical records and retrieve information specific to the diagnosis and treatment of PC.

### Ethnic Group Membership

Standard socio-demographic questionnaires were used to obtain information about ethnic group membership. The current study included participants that self-identified as belonging to one of three ethnic groups: African American, Hispanic, or non-Hispanic White. One of the items that was used to assess ethnicity was taken from the Multigroup Ethnic Identity Measure (MEIM; (Phinney, 1992). The particular item from the MEIM states “My ethnicity is” and the response options include: “1= Asian or Asian American; 2= Black/African American; 3=Hispanic or Latino; 4=Non-Hispanic White; 5=American Indian/Native American; 6=Mixed; Parents from two different groups; 7=Other (and specify)”. An endorsement of a value between two and four automatically placed the participant in one of the three groups of interest (i.e., African American, Hispanic, or non-Hispanic White group). If a participant endorsed his ethnicity as “Mixed” or “Other”, the responses to two items taken from the socio-demographic questionnaire were examined in order to determine whether the participant may be categorized into one of the ethnic minority groups of interest. Specifically, “Are you Hispanic or Latino?” is the item that was used to rule out Hispanic group membership, where participants who responded “yes” were placed in the Hispanic ethnic group. It is important to note that self-identification as Hispanic took precedence over racial group. Therefore, the Hispanic ethnic group was comprised of racially diverse men. The item “With which of the following racial groups do you identify?” was used to evaluate whether the participants who endorsed a “mixed” or “other” ethnicity in the MEIM also self-identified as “Black”. Those men that did were subsequently placed in the “African American” group.

Men who consistently self-identified as mixed, mulatto, multiracial, or “other” and did not self-identify as Hispanic in the racial/ethnic identification items were excluded from the analyses as it would be difficult to draw conclusions about a highly heterogeneous group. Participants who self-identified as Asian/Asian American or American Indian/Native American were also excluded from analyses due to the small sample sizes for these groups in the current study making it difficult to draw conclusions about these underrepresented groups.

### Cultural Vulnerability

The current study used two self-report measures to assess cultural vulnerability. The constructs that were assessed as proxies for cultural vulnerability were Cancer Fatalism and Medical Mistrust.

#### *Cancer Fatalism*

The Powe Fatalism Inventory (PFI) was used to measure participants’ level of cancer fatalism (Powe, 1995). The PFI is a 15-item self-report scale that includes four components of fatalism: fear, pessimism, predetermination, and inevitability of death (Lopez-McKee, McNeill, Eriksen, & Ortiz, 2007). The current study used an adapted version of the PFI, where items included the term “prostate cancer” rather than the general term “cancer”. Participants were asked to indicate how much they agree or disagree with each statement on a five-point Likert scale ranging from “Very much in disagreement” to “Very much in agreement”. Sample items in the PFI that tap into the four domains of fatalism, included: “I think some people don’t want to know if they have prostate cancer because they don’t want to know they may be dying from it”, “I think if a

person gets prostate cancer, their time to die is soon”, “I think if someone gets prostate cancer, it was meant to be”, and “I think if someone gets prostate cancer, that’s the way they were meant to die”. Higher scores on the PFI indicated greater levels of cancer fatalism. The present study used the composite score as the measure of cancer fatalism as the items that comprise the four components of the PFI all load on one factor, which suggests that it assesses a unitary construct (Powe, 1995). The internal reliability for the PFI was adequate when testing English and Spanish versions combined (i.e., Cronbach’s alpha= .85) as well as the Spanish version alone (i.e., Cronbach’s alpha= .89). Previous studies have also found similar results (i.e., high degree of internal consistency of the PFI) in English and Spanish (e.g., Powe, 1995; Lopez-McKee, McNeill, Eriksen, & Ortiz, 2007).

#### *Medical Mistrust*

The Group-Based Medical Mistrust Scale was used to assess medical mistrust (GBMMS; Thompson et al., 2004). The GBMMS is a 12-item self-report scale designed to assess suspicion of the healthcare system, medical professionals, and treatment of medical conditions. Participants were asked to indicate their degree of agreement with each statement in the measure using a five-point Likert-type scale ranging from “Strongly disagree” to “Strongly agree”. An exploratory principal component analysis conducted in a sample of 79 African American and 89 Hispanic women without a history of cancer resulted in the derivation of three GBMMS components: Suspicion (e.g., “People of my ethnic group should be suspicious of information from doctors and health care workers”), Group disparities in health care (e.g., “People of my ethnic group receive the same medical care from doctors and health care workers as people from other groups”), and

Lack of support from health care providers (e.g., “Doctors and health care workers sometimes hide information from patients who belong to my ethnic group”; Thompson et al., 2004). In addition to the three subscale scores, the GBMMS also includes a composite score. The current study used the total GBMMS score as it demonstrated high internal consistency in previous studies (e.g., Cronan et al., 2008; Shelton et al., 2010; Thompson et al., 2004). In the current study, the internal consistency of the GBMMS English and Spanish versions combined (Cronbach’s alpha= .89) and Spanish version alone (Cronbach’s alpha= .86) were adequate.

### Quality of Life

#### *Physical and Emotional Well-Being*

The Functional Assessment of Cancer Therapy-General was used to assess quality of life (FACT-G; Cella et al., 1993). The FACT-G is a 27-item self-report measure that yields four subscale scores and a composite score. Sample items from each subscale include: “I have a lack of energy” (Physical well-being), “I get emotional support from my family” (Social/Family well-being), “I feel nervous” (Emotional well-being), and “I am able to enjoy life” (Functional well-being). Each subscale is comprised of seven items with the exception of the Emotional well-being subscale, which consists of six items. Participants indicated the degree to which each statement had been true in the past seven days using a five-point Likert-type scale ranging from “Not at all” to “Very much”. The current study used the Physical Well-being and Emotional Well-being subscales of the FACT-G as measures of health-related quality of life. Previous studies have also examined these individual subscales in their analyses (e.g., Davies, Kinman, Thomas, &

Bailey, 2008; Fujimura et al., 2009; Rosenfeld, Roth, Gandhi, & Penson, 2004; Victorson, Barocas, Song, & Cella, 2008). The internal reliability for the FACT-G Physical Well-being and Emotional Well-being subscales were adequate when testing English and Spanish versions combined (i.e., Cronbach's alpha= .79 and .75, respectively) and Spanish version alone (i.e., Cronbach's alpha= .88 and .70, respectively).

### *Procedure*

#### Recruitment

Participants were recruited from multiple urology clinics in South Florida. The UM Sylvester Comprehensive Cancer Centers offered a recruitment site located within Miami-Dade County (i.e., Miami, FL) and another in Broward County (Deerfield Beach, FL). Additional recruitment sites located within Miami, FL were JMH and Bruce W. Carter VA Medical Center. Recruitment was conducted by either having a study staff member present at each urology clinic to recruit potential participants or by receiving contact information for potential participants from urology personnel when a staff member was unable to be physically present at the clinic. In the latter case, a study staff member contacted the potential participants via phone. During face-to-face recruitment, the research associate present at the clinic waited to receive direct referrals from the attending physician before initiating contact with patients. A research associate provided potential participants with a brief description of the study and conducted a brief screening interview. The study procedure was approved by the Institutional Review Board (IRB)

and was in full accordance with the Health Information Portability and Accountability Act (HIPAA) guidelines at UM, JMH, and Bruce W. Carter VA Medical Center.

### Screening

A study staff member conducted initial eligibility screening in person at the UM, JMH, and VA urology clinics or by phone. The screening form included general questions related to the person's demographics, medical and psychiatric history, and past participation in research studies. The screening questionnaire was used to ensure that the potential participants met the study's eligibility criteria. Men that endorsed items related to the presence of alcohol/substance abuse and/or active psychiatric symptoms (e.g., psychosis, panic attacks, and dementia) within the past six months were deemed as ineligible to participate in the current study. A study research associate provided men that were excluded for psychiatric reasons with appropriate referrals for mental health services prior to the end of the screening procedure. Men deemed eligible to participate were provided with detailed information regarding the purpose of the study in the form of an oral description, a study flyer containing contact information, and an informed consent form. Those men that expressed interest in participating in the study were invited to schedule an appointment at one of the various study locations. Men recruited from the UM and JMH urology clinics had the option of completing face-to-face assessments at the Clinical Research Building located within the UM Miller School of Medicine or at the UM Sylvester Comprehensive Cancer Center in Deerfield Beach, FL. The availability of two sites provided men with the ability to choose the site that was most conveniently located in reference to their home or work and therefore reduced participation-related burden. However, men recruited from the VA Medical Center urology clinic were only

given the option to complete face-to-face assessments at the same location due to VA policy.

Potential participants signed an IRB-approved informed consent form during the initial study visit. After enrollment in the study, each assessment began with the administration of the MMSE to assess for cognitive impairment (Folstein et al., 1975). The MMSE evaluated several domains of cognitive functioning (e.g., orientation, recall, and calculation) and yielded a maximum score of 30. The current study used a score of 22 or less as an indicator of potential cognitive difficulties, but did not use it as a clear cut-off for exclusion. The current study followed a procedure where participants were dropped from the study if they were found to be not oriented to person, place, and time, and were unable to comprehend study materials. This procedure was implemented given the ethnic diversity of the sample. It has been found that the MMSE may be problematic when used on minority populations as when compared to non-Hispanic Whites, ethnic minorities demonstrate significantly lower MMSE total scores (Wood, Giuliano, Bignell, & Pritham, 2006). A cut-off score of 19 was used as a definitive marker of cognitive impairment. Participants who scored a 19 or below were compensated the full monetary amount for their time and effort and were subsequently withdrawn from the study.

#### Assessments

The assessment battery captured information related to psychosocial processes, coping strategies, quality of life, social support, mood, and cultural factors. The complete assessment battery consisted of a set of questionnaires designed to be completed in a face-to-face interview format and an additional set of questionnaires that were mailed to the participants prior to the face-to-face interview for at-home completion. Participants

were asked to submit their completed take-home measures during the study visit. Although this was the preferred method for participants to complete the psychosocial battery, participants who were unable to schedule a face-to-face visit were given the option to complete the entire assessment battery at home and mail in their completed measures. For those participants who were able to schedule an in-person study visit, the psychosocial assessments were administered by a clinical psychology graduate student or research associate. The duration of each assessment was approximately 2.5 hours. The larger study from which the current study's sample was drawn from also collected blood and saliva samples at each study visit to assess neuroendocrine and immune functioning, PSA levels, and salivary cortisol levels. However, these data were not used in the current study.

All participants, irrespective of whether they attended in-person visits or participated via mail, were compensated \$50.00 at each time point for which they completed an assessment battery. Full participation in the larger study resulted in a maximum compensation of \$250. Because the current study only utilized psychosocial data collected at the baseline time point, participants were only compensated \$50.00 for the baseline assessment.

## Chapter 4: Statistical Analyses

### *Preliminary Analyses*

#### Normality and Descriptive Statistics

All variables included in the current study were tested for normality by assessing the skewness and kurtosis of each variable. A variable was considered to have a non-normal distribution when the absolute value of the skew index was greater than 3.0 and the absolute value of the kurtosis index was greater than 8.0 (Kline, 2005). Variables with skewed distributions were transformed using log transformation. Descriptive statistics for each variable were also evaluated to ensure that each variable demonstrated appropriate mean and standard deviation values as well as maximum and minimum scores within the range of possible values.

#### Internal Consistency

The internal consistency of the items in each measure of the current study was tested using coefficient alpha. Internal consistency was calculated for English and Spanish measures combined. In addition, internal consistency analyses were conducted for Spanish measures alone to determine whether the Spanish measures demonstrated similar estimates of reliability compared to the full sample of English and Spanish measures combined. Before internal consistency estimates of reliability were conducted, modifications were made to measures that required reverse-scaling. The following computations were performed in order to accurately test for internal consistency:

#### *Reverse-Scaling of GBMMS and FACT-G items*

Several items that comprise the GBMMS and FACT-G were reverse-scaled so that higher scores on all items indicated greater levels of medical mistrust and quality of

life, respectively. On the GBMMS, items #2, 8, 10, and 11 were reverse-scaled. The FACT-G required reverse-scaling of all the items that comprised the physical well-being subscale as well as items #1 and #3-6 on the emotional well-being subscale.

#### Analysis of Covariates by Ethnic Group

Several analyses were conducted to determine whether the covariates in the current model varied by ethnic group membership. Multiple one-way analysis of variance (ANOVA) tests were conducted with ethnic group entered as the factor in the analyses. The purpose of conducting the ANOVAs was to determine whether age, subjective social status, PSA level at diagnosis, time since diagnosis, medical comorbidities, religious behavior, and perceived support from the family varied as a function of ethnicity. These analyses were descriptive in nature.

#### Correlational Analyses by Ethnic Group

Correlations among all study variables were assessed. Four sets of correlational analyses were conducted (i.e., full sample, non-Hispanic White men only, Hispanic men only, and African American men only). These analyses were also descriptive in nature and were conducted in order to gain better understanding of the relationship between study variables as well as identify potential differences by ethnic group.

#### *Primary Analyses*

##### *General Approach for Assessing Specific Aims 1-4*

Analyses were conducted using Mplus statistical software version 6 (Muthen & Muthen, 2010). Full information maximum likelihood (FIML) was used to estimate model parameters with missing data. This approach accounted for participants who did

not have complete data and contributed the maximum information possible to the parameter estimates. Because there is no single gold standard for assessing model fit, several fit indices were used to assess model fit (Kline, 2005). One of the fit indexes examined was the model chi-square. Support for the proposed model was indicated by a  $p$  value greater than .05, as a failure to reject the null hypothesis supports the proposed model. In addition, the comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean squared residual (SRMR) were used as model fit indexes. The CFI ranges between zero and one. A CFI value greater than 0.95 indicates a well-fitting model, while a value between 0.90 and 0.94 represents acceptable model fit (Hu & Bentler, 1999). The recommended cutoff criteria for the RMSEA and SRMR are 0.06 and 0.08, where values lower than 0.06 and 0.08 indicate good fit between the proposed model and the observed data (Hu & Bentler, 1999). Suggested modification indexes were used to improve model fit. A significant relationship between variables was determined by a  $p$  level  $< .05$  of the standardized beta coefficient of interest.

#### *Ethnic Group Membership*

Because group membership was categorical, the variable was dummy-coded by selecting a reference group and creating two new dummy-coded variables. All analyses that included ethnic group membership as a variable of interest were run twice in order to make comparisons among all three groups. When non-Hispanic White men served as the reference group, Hispanic and African American men were each compared to non-Hispanic White men. Additional analyses were conducted where Hispanic men served as the reference group and allowed for comparisons to be made between Hispanic and

African American men. For each set of analyses, two new dummy-coded variables were created where members of the reference groups received a score of zero on both of the new dummy-coded variables, members of one of the remaining groups received a score of one on the first dummy-coded variable and zero on the second dummy-coded variable, and the last group received a score of zero on the first dummy-coded variable and one on the second dummy-coded variable.

### Specific Aim 1

Hypothesis 1a: African American and Hispanic men will each report poorer physical well-being compared to non-Hispanic White men.

Hypothesis 1b: African American and Hispanic men will each report poorer emotional well-being compared to non –Hispanic White men.

Hypothesis 1c: Levels of physical and emotional well-being will not be significantly different between African American and Hispanic men.

Path analyses were conducted to test the first aim of the study, which examined the relationship between ethnic group membership and pre-treatment quality of life among PC survivors. The exogenous variable was ethnic group membership, the endogenous variables were physical well-being and emotional well-being, and the covariates were age, language preference, subjective social status, time since diagnosis, medical comorbidities, PSA level at diagnosis, religious behavior, and perceived support from the family. Analyses were run separately for each outcome variable (i.e., physical and emotional well-being).

### Specific Aim 2

Hypothesis 2a: African American and Hispanic men will each report greater levels of cancer fatalism compared to non –Hispanic White men.

Hypothesis 2b: African American and Hispanic men will each report greater levels of medical mistrust compared to non –Hispanic White men.

Hypothesis 2c: Levels of cancer fatalism and medical mistrust will not be significantly different between African American and Hispanic men.

The second aim of the study, which examined the relationship between ethnic group membership and cultural vulnerability factors, was also tested using path analysis. Exogenous variables were the dummy-coded ethnic group membership variables and the endogenous variables were cancer fatalism and medical mistrust total score. Analyses were run separately for each cultural vulnerability factor (i.e., cancer fatalism and medical mistrust) while controlling for all study covariates in each set of analyses.

### Specific Aim 3

Hypothesis 3a: Greater levels of cancer fatalism will be associated with poorer physical well-being among all participants.

Hypothesis 3b: Greater levels of cancer fatalism will be associated with poorer emotional well-being among all participants.

Hypothesis 3c: Greater levels of medical mistrust will be associated with poorer physical well-being among all participants.

Hypothesis 3d: Greater levels of medical mistrust will be associated with poorer emotional well-being among all participants.

Path analysis was also conducted to test the third aim of the study, which examined the relationship between cultural vulnerability factors and pre-treatment quality of life. The analyses for the third aim were conducted including all participants, irrespective of ethnic group. Covariates consisted of age, subjective social status, time since diagnosis, medical comorbidities, PSA level at diagnosis, religious behavior, and perceived support from the family. Each hypothesis was tested separately, where the exogenous and endogenous variables for hypotheses 3a, 3b, 3c, and 3d were cancer fatalism and physical well-being, cancer fatalism and emotional well-being, total medical mistrust and physical well-being, and medical mistrust and emotional well-being, respectively. The fit indexes were analyzed for model goodness of fit using the criteria described above.

#### Specific Aim 4

Hypothesis 4a: Cancer fatalism and medical mistrust will mediate the relationship between ethnic group membership and physical well-being, such that African American and Hispanic men will report greater levels of cultural vulnerability factors and poorer physical well-being compared to non-Hispanic White men.

Hypothesis 4b: Cancer fatalism and medical mistrust will mediate the relationship between ethnic group membership and emotional well-being, such that African American and Hispanic men will report greater levels of cultural vulnerability factors and poorer emotional well-being compared to non-Hispanic White men.

Hypothesis 4c: The indirect effects between ethnic group membership and physical well-being will not be significantly different between Hispanic and African

American men, given that levels of cancer fatalism, medical mistrust, and physical well-being will not significantly vary between these groups.

Hypothesis 4d: The indirect effects between ethnic group membership and emotional well-being will not be significantly different between Hispanic and African American men, given that levels of cancer fatalism, medical mistrust, and emotional well-being will not significantly vary between these groups.

A path analysis was used to assess whether the relationship between ethnic group membership and pre-treatment quality of life was mediated by cultural vulnerability factors. The first step in testing the fourth aim was to assess whether cancer fatalism and total medical mistrust mediated the relationship between ethnic group membership and physical well-being. This step was conducted twice; the first time with non-Hispanic White men as the reference group and the second with Hispanic men as the reference group. Additionally, cancer fatalism and total medical mistrust were tested as mediators of the relationship between ethnic group membership and emotional well-being. The same two-step procedure described above was conducted in order to make emotional well-being outcome comparisons across all three ethnic groups. The direct effects for all mediation analyses were: pre-treatment quality on ethnic group membership, pre-treatment quality of life on total medical mistrust, pre-treatment quality of life on cancer fatalism, total medical mistrust on ethnic group membership, and cancer fatalism on ethnic group membership. Specific and total indirect effects of the relationship between ethnic group membership and pre-treatment quality of life while controlling for relevant covariates were evaluated for each set of analyses. Specific indirect effects examined each cultural vulnerability factor independently and total indirect effects assessed the

effect of both cultural vulnerability factors combined. At each step of the analyses, model fit was evaluated and appropriate model fit modifications were made.

## Chapter 5: Results

### *Preliminary Analyses*

#### Normality and Internal Consistency

Normality testing revealed normal distributions for all study variables, except for PSA level at diagnosis, which was positively skewed (skew index= 9.48; kurtosis= 110.32). The log transformation of PSA level at diagnosis improved skewness and was used in the primary analyses. Internal consistency analyses conducted on the entire sample demonstrated adequate psychometric properties and internal reliability for all measures used in the current study [i.e., Cronbach's alpha: Perceived Support from the Family subscale (.83), Ironson-Woods Religious Behavior subscale (.88), PFI (.85), GBMMS (.89), FACT-G Physical well-being subscale (.79), and FACT-G Emotional well-being subscale (.75)]. Similar results were found when internal consistency analyses were conducted on Spanish-language versions of measures [i.e., Cronbach's alpha: Perceived Support from the Family subscale (.84), Ironson-Woods Religious Behavior subscale (.88), PFI (.89), GBMMS (.86), FACT-G Physical well-being subscale (.88), and FACT-G Emotional well-being subscale (.70)].

#### Sample Description

Analyses were conducted with a sample of 268 men diagnosed with PC who had either not initiated or completed active treatment or had chosen to undergo active surveillance. Participants were an average age of 63.42 years ( $SD= 7.83$ ). The sample was ethnically diverse: non-Hispanic White ( $N= 111$ ), Hispanic ( $N= 77$ ), and African American/Black ( $N= 80$ ). Based on language preference, the majority of participants completed the assessment in English, while only 15% of assessments were completed in

Spanish ( $N= 41$ ). The participants were relatively well-educated, with 48% of the participants having at least a 2-year college degree. Over 41% of the sample had a total combined family income of  $\geq \$50,000$  per year and greater than 60% of participants were married or in equivalent relationships (e.g., long-term partnerships). Participants had an average medical comorbidities score of 2.11 ( $SD= 2.51$ ). The most commonly reported comorbid medical conditions were: connective tissue disease, lupus, or arthritis (28%); diabetes (20%); and circulatory problems in the legs or arms (peripheral vascular disease; 18%). The mean number of months from PC diagnosis to the assessment date was 11.64 months ( $SD=19.74$ ) and average PSA level at diagnosis was 8.38 ng/mL ( $SD= 14.13$ ). See Table 3 for a complete list of descriptive statistics for sociodemographic, medical, and psychosocial variables.

#### Descriptive Analyses of Covariates by Ethnic Group

The current study included a conceptually relevant list of covariates based on the literature (i.e., age, subjective social status, language preference, perceived support from the family, religious behavior, PSA level at diagnosis, time since diagnosis, and medical comorbidities). Multiple one-way ANOVAs were tested to determine whether the conceptually relevant covariates varied by ethnic group membership. All descriptive analyses were conducted using the most current SPSS software (IBM SPSS Statistics for Windows, Version 21.0). Results indicated that the following variables varied among ethnic/racial groups: age [ $F(2,265)= 6.21, p<.01$ ], subjective social standing [ $F(2,262)= 5.23, p<.01$ ], religious behavior [ $F(2,205)= 7.91, p<.01$ ], perceived support from the family [ $F(2,253)= 4.37, p<.02$ ], and months since diagnosis [ $F(2,214)= 4.24, p<.02$ ]. Post-hoc tests revealed that Hispanic ( $M= 61.77, SD= 7.78$ ) and African American men

( $M= 62.30$ ,  $SD= 6.74$ ) were significantly younger than non-Hispanic White men ( $M= 65.37$ ,  $SD= 8.23$ ). Also, Hispanic men ( $M= 6.26$ ,  $SD= 1.93$ ) reported significantly lower subjective social standing than non-Hispanic White men ( $M= 7.10$ ,  $SD= 1.65$ ). Regarding cultural resiliency factors, follow-up tests indicated that Hispanic men ( $M= 11.86$ ,  $SD= 2.71$ ) reported significantly higher levels of perceived support from the family compared to African American ( $M= 10.95$ ,  $SD= 2.51$ ) and non-Hispanic White men ( $M= 10.77$ ,  $SD= 2.29$ ). African American ( $M= 16.87$ ,  $SD= .5.64$ ) and Hispanic men ( $M= 15.30$ ,  $SD= 5.84$ ) reported significantly greater levels of religious behavior than non-Hispanic White men ( $M= 13.16$ ,  $SD= 5.87$ ). Furthermore, post-hoc tests showed that months since PC diagnosis were significantly fewer for African American men ( $M= 7.08$ ,  $SD= 12.20$ ) compared to non-Hispanic White men ( $M= 16.00$ ,  $SD= 24.97$ ), but did not differ from Hispanic men ( $M= 10.10$ ,  $SD= 16.18$ ). PSA level at diagnosis [ $F(2,209)= 0.72$ ,  $p>.05$ ] and medical comorbidities [ $F(2,250)= 0.50$ ,  $p>.05$ ] did not vary as a function of ethnicity. See Table 4 for descriptive statistics for sociodemographic, medical, and psychosocial variables by ethnic group. Refer to Table 5 for post-hoc group comparison statistics of covariate analyses.

#### Correlational Analyses by Ethnic Group

Correlations among all study variables were analyzed. Refer to Tables 6-9 for direction and magnitude of the significant relationships between variables for the full (Table 6), non-Hispanic White (Table 7), Hispanic (Table 8), and African American (Table 9) samples.

### *Primary Analyses*

All analyses were conducted using Mplus statistical software (version 6.12; Muthen & Muthen, 2011). Significance was determined by a  $p$  level  $<.05$  for the beta coefficients of interest. The quality of life covariates included in the analyses were: age, subjective social status, language preference, perceived support from the family, religious behavior, PSA level at diagnosis, time since diagnosis, and medical comorbidities. Missing data was accounted for using FIML. The percent of study variables with missing data were: subjective social standing (1.12%), perceived support from the family (4.48%), religious behavior (22.39%), PSA level at diagnosis (20.89%), time since diagnosis (19.03%), comorbid medical conditions (5.60%), cancer fatalism (6.34%), medical mistrust (4.85%), physical well-being (1.12%), and emotional well-being (1.12%).

Specific Aim 1: To examine the relationship between ethnic group membership and pre-treatment quality of life.

Hypothesis 1a: African American and Hispanic men will each report poorer physical well-being compared to non-Hispanic White men.

Hypothesis 1b: African American and Hispanic men will each report poorer emotional well-being compared to non –Hispanic White men.

Hypothesis 1c: Levels of physical and emotional well-being will not be significantly different between African American and Hispanic men.

The first aim assessed the relationship between ethnic group membership and pre-treatment physical and emotional well-being. Initial analyses resulted in models with poor fit: physical well-being outcome with non-Hispanic White men as the reference

group [chi-square test of model fit ( $\chi^2= 193.94, p<.01$ ); CFI=0.00; RMSEA= 0.20; SRMR= 0.10], physical well-being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2= 193.94, p<.01$ ), CFI=0.00, RMSEA= 0.20, SRMR= 0.08], emotional well-being outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2= 194.01, p<.01$ ), CFI=0.00, RMSEA= 0.20, SRMR= 0.10], and emotional well-being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2= 194.01, p<.01$ ), CFI=0.00, RMSEA= 0.20, SRMR= 0.08]. Model fit was improved by correlating the Hispanic dummy-coded variable with language preference and the African American dummy-coded variable with religious behavior in all analyses that included a non-Hispanic White reference group. As for models with Hispanic as the reference group, the non-Hispanic White and African American dummy-coded variables were each correlated with language preference. All fit indices improved following the modifications: physical well-being outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00], physical well-being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00], emotional well-being outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00], and emotional well-being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00].

After controlling for relevant demographic, psychosocial, and medical covariates, results indicated that ethnic group membership was not significantly associated with

physical and emotional well-being (refer to Table 10). Hypothesis 1a was not supported as levels of physical well-being did not differ among Hispanic ( $\beta = -.16, p = .07$ ) and African American ( $\beta = -.09, p = .23$ ) men compared to non-Hispanic White men (refer to Figure 3). Hypothesis 1b was also not supported as levels of emotional well-being did not vary among Hispanic ( $\beta = -.01, p = .97$ ) and African American ( $\beta = .11, p = .13$ ) men compared to non-Hispanic White men (refer to Figure 4). Hypothesis 1c was supported (refer to Figure 5), such that there were no significant differences between levels of physical and emotional well-being between Hispanic and African American men (physical:  $\beta = .07, p = .45$ ; emotional:  $\beta = .11, p = .23$ ). The results suggest that ethnic group membership is not an independent correlate of physical or emotional quality of life prior to the initiation of active PC treatment.

Specific Aim 2: To examine the relationship between ethnic group membership and cultural vulnerability factors.

Hypothesis 2a: African American and Hispanic men will each report greater levels of cancer fatalism compared to non-Hispanic White men.

Hypothesis 2b: African American and Hispanic men will each report greater levels of medical mistrust compared to non-Hispanic White men.

Hypothesis 2c: Levels of cancer fatalism and medical mistrust will not be significantly different between African American and Hispanic men.

The second set of statistical analyses evaluated the relationship between ethnic group membership and cultural vulnerability factors. All models were just-identified and demonstrated adequate fit indexes: cancer fatalism outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2 = 0.00, p < .01$ ), CFI=1.00,

RMSEA= 0.00, SRMR= 0.00], cancer fatalism outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00], medical mistrust outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00], and medical mistrust outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00].

Results indicated that ethnic group membership was significantly associated with cultural vulnerability factors (refer to Table 11 and Figure 6). Hypothesis 2a was partially supported as Hispanic ( $\beta= .15, p= .03$ ) men reported greater levels of cancer fatalism compared to non-Hispanic White men. However, levels of cancer fatalism did not differ between African American and non-Hispanic White men ( $\beta= .03, p= .66$ ). Hypothesis 2b was also supported as Hispanic ( $\beta= .19, p<.01$ ) and African American ( $\beta= .20, p<.01$ ) men each reported greater levels of medical mistrust compared to non-Hispanic White men. In addition, Hypothesis 2c was supported, such that there were no significant differences between levels of cultural vulnerability factors between Hispanic and African American men (cancer fatalism:  $\beta= -.12, p= .10$ ; medical mistrust:  $\beta= .01, p= .90$ ). The findings suggest that ethnic group membership is independently related to cultural vulnerability factors.

Specific Aim 3: To examine the relationship between cultural vulnerability factors and pre-treatment quality of life.

Hypothesis 3a: Greater levels of cancer fatalism will be associated with poorer physical well-being among all participants.

Hypothesis 3b: Greater levels of cancer fatalism will be associated with poorer emotional well-being among all participants.

Hypothesis 3c: Greater levels of medical mistrust will be associated with poorer physical well-being among all participants.

Hypothesis 3d: Greater levels of medical mistrust will be associated with poorer emotional well-being among all participants.

The third set of analyses examined whether greater levels of cancer fatalism and medical mistrust were associated with poorer physical and emotional well-being after controlling for relevant covariates (refer to Table 12). The fit indices for all the just-identified models were adequate: chi-square test of model fit ( $\chi^2 = 0.00, p < .01$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.00. Hypotheses 3a and 3b were not supported as cancer fatalism was not related to physical ( $\beta = -.12, p = .06$ ) or emotional ( $\beta = -.10, p = .11$ ) well-being (refer to Figure 7). Although not significant, the results suggest a trend in the relationship between cancer fatalism and physical well-being, where greater levels of cancer fatalism were related to poorer physical quality of life. On the other hand, the results supported hypotheses 3c and 3d, as medical mistrust was negatively associated with pre-treatment quality of life (refer to Figure 8). As hypothesized, greater levels of medical mistrust were significantly associated with poorer physical ( $\beta = -.14, p = .03$ ) and emotional ( $\beta = -.13, p = .04$ ) well-being. The results suggest that cultural factors, such as medical mistrust, may have a role in quality of life outcomes prior to PC treatment.

Specific Aim 4: To examine whether cultural vulnerability factors mediate the relationship between ethnic group membership and pre-treatment quality of life.

Hypothesis 4a: Cancer fatalism and medical mistrust will mediate the relationship between ethnic group membership and physical well-being, such that African American and Hispanic men will report greater levels of cultural vulnerability factors and poorer physical well-being compared to non-Hispanic White men by way of differences in fatalism and medical mistrust.

Hypothesis 4b: Cancer fatalism and medical mistrust will mediate the relationship between ethnic group membership and emotional well-being, such that African American and Hispanic men will report greater levels of cultural vulnerability factors and poorer emotional well-being compared to non-Hispanic White men by way of differences in fatalism and medical mistrust.

Hypothesis 4c: The indirect effects between ethnic group membership and physical well-being will not be significantly different among Hispanic and African American men by way of differences in fatalism and medical mistrust, given that levels of cancer fatalism, medical mistrust, and physical well-being will not significantly vary between these groups.

Hypothesis 4d: The indirect effects between ethnic group membership and emotional well-being will not be significantly different among Hispanic and African American men by way of differences in fatalism and medical mistrust, given that levels of cancer fatalism, medical mistrust, and emotional well-being will not significantly vary between these groups.

The fourth aim of the study examined whether cultural vulnerability factors mediated the relationship between ethnic group membership and physical and emotional well-being. Model fit was poor among all initial analyses: physical well-being outcome

with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2=207.33, p<.01$ ), CFI=0.00, RMSEA= 0.14, SRMR= 0.09], physical well-being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2=207.33, p<.01$ ), CFI=0.00, RMSEA= 0.14, SRMR= 0.08], emotional well-being outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2=207.17, p<.01$ ), CFI=0.00, RMSEA= 0.14, SRMR= 0.09], and emotional well-being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2=207.17, p<.01$ ), CFI=0.00, RMSEA= 0.14, SRMR= 0.07].

The same fit modifications implemented in the first aim of the study were applied: model fit was improved by correlating the dummy coded variables for Hispanic and African American group membership with language preference and religious behavior, respectively (non-Hispanic White reference group analyses), while language preference was correlated with the dummy coded variables for non-Hispanic White and African American group membership (Hispanic reference group analyses). In addition, model fit was improved by correlating medical mistrust and cancer fatalism for all Aim 4 analyses.

Model fit improved for all models following the modifications: physical well-being outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2=13.36, p=.65$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.02], physical well-being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2=13.36, p=.65$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.02], emotional well-being outcome with non-Hispanic White men as the reference group [chi-square test of model fit ( $\chi^2=13.23, p=.66$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.02], and emotional well-

being outcome with Hispanic men as the reference group [chi-square test of model fit ( $\chi^2 = 13.23, p = .66$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.02].

Results indicated that cultural vulnerability factors did not mediate the relationship between ethnic group membership and physical well-being; however, indirect effects between ethnic group membership and emotional well-being were found after controlling for relevant demographic, psychosocial, and medical covariates.

*Hypothesis 4a: Ethnic group membership, Cancer fatalism, Medical mistrust, and Physical well-being (non-Hispanic White reference group).* The direct effects between ethnic group membership and physical well-being were not significant; specifically, levels of physical well-being did not differ among Hispanic ( $\beta = -.12, p = .16$ ) and African American ( $\beta = -.06, p = .37$ ) men compared to non-Hispanic White men. The specific indirect relationships between ethnicity and physical well-being mediated by medical mistrust were not significant [Hispanic vs. non-Hispanic White men ( $\beta = -.02, p = .19$ ); African American vs. non-Hispanic White men ( $\beta = -.02, p = .18$ )]. Similarly, the specific indirect relationships between ethnicity and physical well-being via cancer fatalism were not significant [Hispanic vs. non-Hispanic White men ( $\beta = -.02, p = .25$ ); African American vs. non-Hispanic White men ( $\beta = -.01, p = .70$ )]. However, there was a trend toward significance for the indirect relationship between Hispanic ethnicity and physical well-being when both cultural vulnerability mediators were included in the model ( $\beta = -.04, p = .054$ ). The indirect relationship between African American ethnicity and physical well-being remained non-significant when both mediators were included, resulting in a total indirect effect of ( $\beta = -.02, p = .18$ ). The results suggest that hypothesis 4a was not

supported given the non-significant results for specific and total indirect effects. Refer to Table 13 and Figure 9 for model statistics of modified model.

*Hypothesis 4b: Ethnic group membership, Cancer fatalism, Medical mistrust, and Emotional well-being (non-Hispanic White reference group).* Ethnic group differences in emotional well-being were not seen when comparing Hispanic ( $\beta = .04, p = .66$ ) and African American ( $\beta = .14, p = .051$ ) men to non-Hispanic White men, as the direct effects between ethnic group membership and emotional well-being were not significant. Tests to determine whether ethnic group membership and emotional well-being were related indirectly via individual cultural vulnerability factors also resulted in null findings. Neither medical mistrust [Hispanic vs. non-Hispanic White men = ( $\beta = -.03, p = .09$ ); African American vs. non-Hispanic White men = ( $\beta = -.03, p = .09$ )] nor cancer fatalism [Hispanic vs. non-Hispanic White men = ( $\beta = -.01, p = .33$ ); African American vs. non-Hispanic White men = ( $\beta = -.01, p = .70$ )] mediated the relationship between ethnicity and emotional quality of life. Interestingly, the inclusion of both cultural vulnerability factors simultaneously in the model comparing Hispanic and non-Hispanic White men resulted in a significant total indirect relationship between ethnicity and emotional well-being ( $\beta = -.04, p = .04$ ). However, when African American men were compared to non-Hispanic White men in the two-mediator model, results were non-significant (total indirect effect =  $\beta = -.03, p = .09$ ). The findings provide partial support for hypothesis 4b, where Hispanic men reported significantly greater levels of medical mistrust and cancer fatalism than non-Hispanic White men and medical mistrust was associated with poorer emotional well-being ( $R^2 = .104, p = .004$  indicating a small effect size of the model). Ethnic group membership (i.e., Hispanic vs. non-Hispanic White men) has a negative indirect effect on

emotional well-being by two separate pathways (i.e., via medical mistrust and cancer fatalism). Refer to Table 13 and Figure 10 for model statistics of modified model.

*Hypothesis 4c: Ethnic group membership, Cancer fatalism, Medical mistrust, and Physical well-being (Hispanic reference group).* The direct effect between ethnicity and physical well-being was not significant, such that African American men did not differ from Hispanic men ( $\beta = .06, p = .54$ ). Specific indirect effects were also not significant for medical mistrust ( $\beta = .00, p = .96$ ) and cancer fatalism ( $\beta = .01, p = .29$ ). Furthermore, the total indirect effect was not significant when both cultural vulnerability factors were included in the model simultaneously ( $\beta = .01, p = .41$ ). The results support hypothesis 4c given that significant indirect relationships were not found when comparing Hispanic and African American subgroups. Refer to Table 13 and Figure 11 for model statistics of modified model.

*Hypothesis 4d: Ethnic group membership, Cancer fatalism, Medical mistrust, and Emotional well-being (Hispanic reference group).* Levels of emotional well-being did not differ between African American and Hispanic men, where the direct effect between ethnicity and emotional well-being was not significant ( $\beta = .10, p = .27$ ). Specific indirect effects were also non-significant: medical mistrust ( $\beta = .00, p = .99$ ) and cancer fatalism ( $\beta = .01, p = .37$ ). As predicted, the total indirect effect of both pathways was not significant ( $\beta = .01, p = .55$ ). These findings provide support for hypothesis 4d, where it was predicted that indirect relationships between ethnicity and emotional well-being would not vary between Hispanic and African American men. (Refer to Table 13 and Figure 11 for model statistics of modified model).

## *Secondary Analyses*

### Analysis of Specific Aims 2, 3, and 4 using GBMMS subscales

The second, third, and fourth aims of the study resulted in significant differences in levels of total medical mistrust among Hispanic and African American men compared to non-Hispanic White men (Aim 2), a negative relationship between total medical mistrust and pre-treatment quality of life outcomes (Aim 3), and an indirect relationship between ethnic group membership and emotional well-being mediated by cancer fatalism and total medical mistrust (Aim 4). Additional analyses were conducted as a follow-up to these significant results to test the association of specific GBMMS subscales (i.e., suspicion, group disparities in health care, and lack of support from health care providers) on these relationships.

*Aim 2: Relationship between ethnic group membership and medical mistrust subscales.* All models were just-identified and demonstrated adequate fit indexes [chi-square test of model fit ( $\chi^2 = 0.00, p < .01$ ); CFI=1.00; RMSEA= 0.00; SRMR= 0.00]. Hispanic men reported significantly greater levels of suspicion than non-Hispanic White men ( $\beta = .13, p = .047$ ). Similarly, comparison of levels of suspicion between African American and non-Hispanic White men approached significance where African American men reported greater suspicion ( $\beta = .13, p = .050$ ). Hispanic men also endorsed greater perceived group disparities in health care compared to non-Hispanic White men ( $\beta = .17, p = .01$ ), while African American men did not differ from non-Hispanic White men in this domain ( $\beta = .09, p = .17$ ). Additionally, both Hispanic ( $\beta = .16, p = .01$ ) and African American ( $\beta = .30, p < .01$ ) men reported greater lack of support from health care providers compared to non-Hispanic White men. While African American men differed

from non-Hispanic White men in only one domain of medical mistrust (i.e., greater lack of support from health care providers), Hispanic men reported significantly greater levels than non-Hispanic White men across all domains.

*Aim 3: Relationship between medical mistrust subscales and pre-treatment quality of life outcomes.* The fit indexes for all models were adequate [chi-square test of model fit ( $\chi^2= 0.00, p<.01$ ); CFI=1.00; RMSEA= 0.00; SRMR= 0.00]. Greater levels of lack of support from health care providers were significantly associated with poorer physical well-being ( $\beta= -.13, p= .04$ ). Suspicion ( $\beta= -.12, p= .06$ ) and perceived group disparities in health care ( $\beta= -.09, p= .15$ ) were not associated with physical well-being. In addition, none of the medical mistrust subscales were associated with emotional well-being: suspicion ( $\beta= -.10, p= .10$ ), perceived group disparities in health care ( $\beta= -.10, p= .11$ ), and lack of support from health care providers ( $\beta= -.10, p= .12$ ). The findings suggest a specific effect of greater lack of support from health care providers on physical well-being. However, the association between medical mistrust and emotional well-being is driven by an overall medical mistrust level rather than its specific components.

*Aim 4: Indirect relationship between ethnic group membership, cancer fatalism, medical mistrust subscales, and emotional well-being (non-Hispanic White vs. Hispanic men).* The same fit modifications performed in the primary analyses were included in order to achieve good model fit. All models demonstrated overall adequate model fit: Suspicion subscale [chi-square test of model fit ( $\chi^2= 10.61, p= .83$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.02], perceived group disparities in health care subscale [chi-square test of model fit ( $\chi^2= 22.82, p= .12$ ), CFI=0.79, RMSEA= 0.04, SRMR= 0.03], and lack of support from health care providers subscale [chi-square test of model fit ( $\chi^2= 10.18, p=$

.86), CFI=1.00, RMSEA= 0.00, SRMR= 0.02]. Analyses were conducted following the significant negative indirect effect of ethnic group membership (Hispanic vs. non-Hispanic White men) on emotional well-being via total medical mistrust and cancer fatalism. Upon examination of the specific medical mistrust subscales, the simultaneous inclusion of suspicion and cancer fatalism resulted in a non-significant total indirect effect ( $\beta = -.24, p = .09$ ). The total indirect effects for the combinations of perceived group disparities in health care and cancer fatalism ( $\beta = -.03, p = .054$ ) as well as lack of support from health care providers and cancer fatalism ( $\beta = -.03, p = .050$ ) approached significance. The findings imply that the indirect effect of ethnic group membership (Hispanic vs. non-Hispanic White men) on emotional well-being is the result of the impact of cancer fatalism and total medical mistrust rather than medical mistrust subscales.

Exploratory Analysis: Ethnicity, Perceived support from the family, and Emotional well-being

In an effort to identify mediators of the relationship between ethnicity and quality of life, exploratory analyses were conducted to assess whether perceived support from the family mediated the relationship between ethnic group membership and emotional well-being. Perceived support from the family was selected as a potential mediator of this relationship given previous findings from this study demonstrating that perceived support from the family was a significant covariate of emotional well-being in all analyses and varied by ethnic group membership (i.e., Hispanic men reported significantly greater levels of perceived support from the family compared to non-Hispanic White men). Covariates in the analyses included: age, subjective social status, language preference,

religious behavior, PSA level at diagnosis, time since diagnosis, and medical comorbidities. The same fit modifications conducted in the primary analyses were used accordingly for the non-Hispanic White (i.e., correlated the Hispanic dummy-coded variable with language preference and the African American dummy-coded variable with religious behavior) and Hispanic (correlated the non-Hispanic White and African American dummy-coded variables with language preference) reference group models. Both models demonstrated overall adequate model fit: non-Hispanic White reference group [chi-square test of model fit ( $\chi^2= 12.19, p=.09$ ), CFI=0.77, RMSEA= 0.05, SRMR= 0.02] and Hispanic reference group [chi-square test of model fit ( $\chi^2= 12.19, p=.09$ ), CFI=0.77, RMSEA= 0.05, SRMR= 0.02].

Ethnic group differences in emotional well-being were not seen when comparing Hispanic ( $\beta= -.01, p= .96$ ) and African American ( $\beta= .11, p= .13$ ) men to non-Hispanic White men, as the direct effects between ethnic group membership and emotional well-being were not significant. Furthermore, emotional quality of life did not differ between Hispanic and African American men ( $\beta= .11, p= .23$ ). Further analyses were conducted to determine whether ethnic group membership and emotional well-being were related indirectly via perceived support from the family. When African American men were compared to 1) non-Hispanic White and 2) Hispanic men, results indicated that perceived support from the family did not mediate the relationship between ethnic group membership and emotional quality of life; indirect effects were ( $\beta= .01, p= .62$ ) and ( $\beta= -.03, p= .08$ ), respectively.

However, when Hispanic and non-Hispanic White men were compared, a significant indirect relationship was found between ethnic group membership and

emotional well-being ( $\beta = .03, p = .04$ ). Hispanic men reported significantly greater levels of perceived support from the family than non-Hispanic White men ( $\beta = .19, p = .01$ ) and greater level of perceived support from the family was associated with better emotional well-being ( $\beta = .18, p < .01$ ). The significant indirect effect in the relationship between ethnicity and emotional well-being suggests that perceived support from the family may serve as a protective factor against poorer emotional quality of life for Hispanic men compared to non-Hispanic White men (refer to Figure 12). Of note, the effect size of this model was minimal ( $R^2 = .077, p = .016$ ).

Exploratory Analysis: Ethnic group differences in Emotional well-being mediated by Cancer Fatalism, Medical Mistrust, and Perceived Support from the Family (non-Hispanic White vs. Hispanic men)

An additional exploratory model was tested to follow up on significant study findings in identifying indirect effects in the relationship between ethnic group membership (non-Hispanic vs. Hispanic men) and emotional well-being. Following procedures from Study Aim 4, a three-mediator model (i.e., cancer fatalism, medical mistrust, and perceived support from the family) was tested to assess the indirect relationship between ethnic group membership and emotional well-being. Covariates included: age, subjective social status, language preference, religious behavior, PSA level at diagnosis, time since diagnosis, and medical comorbidities. Consistent with previous models, the Hispanic dummy-coded variable was correlated with language preference. The model demonstrated overall adequate model fit: chi-square test of model fit ( $\chi^2 = 25.43, p = .09$ ), CFI=0.96, RMSEA= 0.02, SRMR= 0.03.

Ethnic group differences in emotional well-being were not seen when comparing Hispanic men to non-Hispanic White men, as the direct effects between ethnic group membership and emotional well-being were not significant ( $\beta = .04, p = .67$ ). Tests to determine whether ethnic group membership and emotional well-being were related indirectly via cancer fatalism, medical mistrust, and perceived support from the family also resulted in null findings. Whereas the specific indirect effects for medical mistrust ( $\beta = -.03, p = .09$ ) and cancer fatalism ( $\beta = -.01, p = .34$ ) in the relationship between ethnic group membership and emotional well-being were not significant, perceived support from the family significantly mediated the relationship between ethnicity and emotional quality of life ( $\beta = .03, p = .04$ ). However, the total indirect effect (i.e., three-mediator model) resulted in null findings ( $\beta = -.01, p = .88$ ).

## Chapter 6: Discussion

The purpose of the current study was to examine the relationships between ethnic group membership, cultural vulnerability factors, and general quality of life outcomes (i.e., physical and emotional well-being) among men diagnosed with PC who had not initiated PC-related treatment. Specifically, the study sought to determine whether African American, Hispanic, and non-Hispanic White men differed on physical and emotional well-being after a PC diagnosis. In addition, the study aimed to determine whether ethnic differences in quality of life were accounted for by levels of cancer fatalism and medical mistrust, above and beyond sociodemographic and clinical factors.

Due to the availability of effective screening procedures, men are being diagnosed at younger ages with localized PC. In addition to availability of screening procedures, effective treatments for localized PC have led to reduced mortality rates with relative 5-year survival rates near 100% for all men diagnosed with early-stage PC. Although effective, PC treatments have negative consequences on general and disease-specific quality of life. Given that men are being diagnosed with PC at earlier ages and survival rates are near 100% after diagnosis, it is important to examine the psychological implications of the disease (Namiki & Arai, 2009).

Ethnic disparities exist in the incidence and mortality rates of PC survivors, particularly between African American and non-Hispanic White men. African American men are more likely to be diagnosed with PC and are twice as likely to die of PC compared to non-Hispanic White men (ACS, 2013). Although Hispanic men have the lowest incidence and mortality rates, Hispanic PC survivors treated for PC experience poorer post-treatment quality of life outcomes than non-Hispanic White men (e.g.,

Penedo et al., 2006). Similar results have been found among African American PC survivors reporting greater treatment-related side effects when compared to non-Hispanic White men (e.g., Chornokur et al., 2011). Ethnic disparities in incidence, mortality, and quality of life outcomes among PC survivors emphasize the need to explore factors that may place ethnic minority men at risk for poorer adjustment following PC diagnosis and treatment.

This study sought to contribute to the extant literature by focusing on general quality of life after a PC diagnosis in men who had not been treated. This may provide relevant information about pre-treatment factors that may play a role in quality of life outcomes post-treatment. The physical and emotional well-being between the period that a man is diagnosed with PC and before he is treated is critical to evaluate, as men are faced with uncertainty about treatment decisions, and concerns about side effects of potential treatments such as discomfort, pain, sense of compromised masculinity, and emotional distress (Mohamed et al., 2012). The quality of life outcomes of men who do not choose to undergo active treatment should also be examined. In addition, the present study sought to identify factors that place PC survivors at risk for poorer adjustment. Cancer-related distress is common among cancer survivors at diagnosis and may resolve over time (Badger et al., 2004; Matthews et al., 2012). However, it is known that severity of distress and cancer-related stressors may vary by ethnic group membership with ethnic minority men at increased risk of unresolved distress after treatment.

The present study was based on Angel and Thoits' (1987) framework for understanding the impact of culture on illness experience, which states that culture influences the interpretation of physiological and psychological status by way of beliefs

and attitudes. Specifically, the present study examined the role of culturally-specific cognitive factors (i.e., cancer fatalism and medical mistrust) on the relationship between ethnic group membership and quality of life outcomes (i.e., physical and emotional well-being) following a prostate cancer diagnosis. The current study addressed several gaps in the literature by examining the role of cultural vulnerability factors, which are found at greater levels among ethnic minority men, on pre-treatment quality of life. Cancer fatalism and medical mistrust have been examined in cancer populations as they relate to poorer screening behavior, less satisfaction with care, lower adherence to treatment, and likelihood of having a physician (e.g., Hammond, 2010; Shelton et al., 2010; Lopez-McKee et al., 2008; Trachtenberget al., 2005; Powe & Finnie, 2003; Balkrishnan et al., 2003; LaVeist et al., 2000). However, this is the first study to examine the role of these culturally-specific factors on general quality of life following PC diagnosis. The present study further contributed to the extant literature by exploring quality of life outcomes among an ethnically diverse sample of men. Furthermore, this is the first study that examined the role of cultural vulnerability factors on quality of life among men who opted for active surveillance to manage their disease.

#### Findings from Descriptive Analyses

Descriptive analyses were conducted to determine whether age, subjective social status, PSA level at diagnosis, time since diagnosis, medical comorbidities, religious behavior, and perceived support from the family varied as a function of ethnicity. The sample was ethnically diverse with approximately 30% Hispanic, 29% African Americans, and 41% non-Hispanic Whites. Overall, men in the present study were younger than the average man diagnosed with cancer in the United States (i.e., average

age at diagnosis is 67 years; ACS, 2013). In particular, Hispanic and African American men were significantly younger than non-Hispanic White men during baseline visit. This finding is consistent with previous studies, which found that ethnic minority men were diagnosed with PC at earlier ages than non-Hispanic White men (Chornokur et al., 2011) and African American cancer survivors were diagnosed with cancer at an earlier age than non-Hispanic White cancer survivors (Matthews et al., 2012). Additionally, African American men in the current study had been diagnosed more recently than non-Hispanic White men as they had significantly fewer months since diagnosis.

As expected, non-Hispanic White men reported greater subjective social standing than Hispanic men. This difference may be explained by greater likelihood of non-Hispanic White men having a higher level of education, income, and job compared to ethnic minority men. Hispanic men reported the highest levels of perceived support from the family compared to African American and non-Hispanic White men. Similar to previous study, Hispanics reported greater levels of perceived support from the family than other ethnic groups (Sabogal et al., 1987). Both African American and Hispanic men reported greater levels of religious behavior than non-Hispanic White men. Greater levels of religiosity and spirituality among ethnic minorities diagnosed with a chronic medical illness have been demonstrated various times in the literature (e.g., Halbert et al., 2007; Wildes et al., 2009; Krupski et al., 2005).

However, no differences among ethnic groups were found in medical comorbidities or PSA level at diagnosis. Lack of differences may be due to the fact that all men, independent of ethnicity, were diagnosed with early-stage cancer and were younger than the average man diagnosed with PC. Prior observations of greater

likelihood of medical comorbidities among African American cancer survivors compared to non-Hispanic White individuals (Matthews et al., 2012) was not replicated in the current study. Medical comorbidities may not be as likely to appear in PC patients who are diagnosed at younger ages.

#### Test of Study Hypotheses

The study consisted of four study aims. The first aim examined the relationship between ethnic group membership and pre-treatment quality of life. After controlling for relevant demographic, psychosocial, and medical covariates, results indicated that ethnic group membership was not significantly associated with physical and emotional well-being. The findings suggest that physical and emotional quality of life prior to the initiation of active PC treatment do not vary as a function of ethnic group membership when controlling for relevant covariates. Penedo et al. (2006) found that the relationship between ethnicity and quality of life appeared to be accounted for by sociodemographic, medical, and health behavior factors. In the current study, none of the covariates were related to physical well-being. This is contrary to previous findings where time since diagnosis and medical comorbidities were related to physical well-being (Matthews et al., 2012). Interestingly, greater perceived support from the family was associated with better emotional well-being in the present study.

However, ethnic group differences in quality of life outcomes were found when covariates were not included in the analyses. Specifically, non-Hispanic White men reported greater levels of physical well-being than Hispanic men. In addition and contrary to study hypotheses, African American men reported significantly greater levels of emotional well-being than Hispanic men. One explanation for the findings is that all

participants reported overall high levels of quality of life outcomes. In the current study, physical well-being for each ethnic group was higher than that of general US adult male population (Brucker et al., 2005). Relative to the normative adult population without cancer in the United States, non-Hispanic White men in the current study reported equivalent levels of emotional well-being, Hispanic men reported lower emotional well-being, and African American men reported greater levels of emotional well-being. Emotional well-being levels among Hispanics in the current study were similar to those of normative values from the cancer survivor population (Brucker et al., 2005).

The second aim of the study was to examine the relationship between ethnic group membership and cultural vulnerability factors. Hispanic men reported greater levels of cancer fatalism compared to non-Hispanic White men; however, levels of cancer fatalism did not differ between African American and non-Hispanic White men. The null findings in the relationship between ethnic group membership (non-Hispanic White vs. African American men) and cancer fatalism may be partially explained by prevalence of health insurance as well as United States (US) citizenship-status among African Americans in the current sample. A previous study found higher levels of cancer fatalism among Caribbean-born men (non-US citizens) compared to men born in the US or in the Caribbean with US citizenship (Odedina et al., 2011). Furthermore, lack of health insurance was also associated with greater levels of cancer fatalism among Black men (Odedina et al., 2011). The vast majority of the African Americans in the current sample (i.e., 76%) were recruited from the Bruce W. Carter VA Medical Center. By nature of qualifying for receiving services at the VA, all African American men recruited at that site had US citizenship and health insurance benefits, which may support

comparable cancer fatalism levels between non-Hispanic White and African American men.

Hispanic and African American men each reported greater levels of medical mistrust compared to non-Hispanic White men. As predicted, levels of cultural vulnerability factors did not differ between Hispanic and African American men. The findings support previous studies that show cultural vulnerability factors are greater among ethnic minorities and therefore, important factors to consider when working with Hispanic and African American individuals. For example, Halbert et al., 2009 found that African American men PC survivors reported greater levels of medical mistrust compared to non-Hispanic White men. Medical mistrust values in the current study for African American and non-Hispanic White men were similar to those found by Halbert et al., 2009 [i.e., medical mistrust level for African American men,  $M=26.3$ , ( $SD=7.0$ ) and non-Hispanic White men,  $M=21.1$ , ( $SD=5.9$ )].

The third aim was to examine the relationship between cultural vulnerability factors and pre-treatment quality of life. Independent of ethnic group membership, greater levels of medical mistrust were associated with poorer physical and emotional well-being above and beyond relevant covariates. However, cancer fatalism was not related to levels of physical or emotional well-being. The results of the current study provide novel information about culturally specific correlates of quality of life outcomes for men diagnosed with PC. Although previous studies have explored sociodemographic correlates of quality of life outcomes (e.g., Matthews et al., 2012), none have looked at culturally relevant factors, such as fatalism and medical mistrust. Research on the impact of medical mistrust on the quality of life of cancer survivors is not well developed. This

is the first study to identify a strong relationship between medical mistrust and poorer physical and emotional well-being in PC survivors prior to receiving treatment. However, results are consistent with those from a previous study that found lower levels of medical mistrust were associated with better quality of life among women diagnosed and treated for breast cancer (Maly, Stein, Umezawa, Leake, & Anglin, 2008).

The fourth aim of the study examined whether cultural vulnerability factors mediated the relationship between ethnic group membership and pre-treatment quality of life, while controlling for relevant covariates. The simultaneous inclusion of ethnic group membership (two-group comparisons at a time), cancer fatalism, and medical mistrust, and physical well-being resulted in no significant relationships between variables.

Similarly, including only one cultural vulnerability factor in the analyses also resulted in null findings in the relationship between ethnic group membership and physical well-being. However, a trend toward significance for the indirect relationship between ethnic group membership (Hispanic vs. non-Hispanic White men) and physical well-being was found when both cultural vulnerability factors (fatalism and medical mistrust) were included in the model, above and beyond relevant covariates. The findings provide support for the consideration of both of these cultural vulnerability factors when assessing physical well-being levels among Hispanic PC survivors.

The examination of the relationship between ethnicity, cancer fatalism, medical mistrust, and emotional well-being resulted in a significant total indirect relationship between ethnicity and emotional well-being, when comparing non-Hispanic White and Hispanic White men. In this model, Hispanic men reported significantly greater levels of medical mistrust and cancer fatalism than non-Hispanic White men and medical mistrust

was associated with poorer emotional well-being. However, cancer fatalism was not independently related to emotional well-being in the model. Neither medical mistrust nor cancer fatalism individually explained indirect effects between ethnicity and emotional quality of life. No indirect relationships were found when comparing African American men with Hispanic and non-Hispanic White men. The indirect relationship between ethnic group membership and emotional well-being remained significant even after controlling for sociodemographic, clinical, and culturally protective factors (i.e., religious behavior and perceived support from the family). The findings suggest that ethnicity is related to emotional well-being indirectly through cancer fatalism and medical mistrust, such that Hispanic PC survivors experience poorer emotional well-being prior to PC treatment via greater levels of cancer fatalism and medical mistrust. The finding has important implications as greater levels of cultural vulnerability factors may place Hispanic men at risk for experiencing poorer emotional adjustment following PC diagnosis.

#### Secondary Analyses with GBMMS Subscales

Follow-up analyses were conducted in order to assess whether subscales from the GBMMS (used to measure medical mistrust) were related to ethnic group membership and pre-treatment quality of life outcomes. Hispanic men reported significantly greater levels of suspicion, perceived group disparities in health care, and greater lack of support from health care providers compared to non-Hispanic White men. African American men only differed from non-Hispanic White men on the perceived lack of support from health care providers subscale, where African Americans endorsed greater levels. The findings suggest that Hispanic men report an overall greater sense of mistrust about the health care

system and its providers as evidenced by suspicion about health care, perceived inequality of treatment, and insensitivity from medical providers. However, African American men's mistrust only differed from that of non-Hispanic White men as it pertained to greater beliefs that their medical providers' actions were insensitive or potentially detrimental (Thompson et al., 2004).

When assessing the relationship between medical mistrust subscales and physical and emotional well-being, only one subscale was significantly related to quality of life. Specifically, greater levels of lack of support from health care providers were associated with poorer physical well-being. The fact that total medical mistrust, but none of its subscales, related to emotional well-being indicate that medical mistrust is related to emotional well-being through its multiple dimensions, rather than by any specific component. The significant relationship between perceived lack of support from health care providers and physical well-being may suggest that men are more likely to endorse symptoms such as pain or an overall feeling of illness when they have lower levels of trust in their medical providers. Due to the correlational relationship between the variables, it is unclear whether the mistrust is predicting poorer physical well-being or vice versa. It is also possible that poorer physical well-being may increase perceptions that doctors do not have the best interests of patients.

#### Exploratory Analyses

Exploratory analyses revealed that Hispanic men reported significantly greater levels of perceived support from the family than non-Hispanic White men and greater level of perceived support from the family was associated with better emotional well-being. The finding suggests that perceived support from the family may serve as a

protective factor against poorer emotional quality of life for Hispanic men. However, the relationship was not found when African Americans were compared to non-Hispanic White men. The null findings for African American men are consistent with a previous study that examined the effects of familism subscales on caregivers' health outcomes, where perceived support from the family was not associated with mental or physical health (Sayegh & Knight, 2010). The familism subscale used in the current study may be closely tied to Hispanic-specific values. The present study contributed unique findings to the existing literature about quality of life correlates among Hispanic PC survivors. However, a better measure of social support that taps into comfort with discussing issues related to cancer diagnosis and treatment as well as ability to seek support beyond their social networks may be needed to evaluate protective factors in the relationship between ethnicity and emotional well-being among African Americans (Hamilton, Moore, Powe, Agarwal, & Martin, 2010). Greater levels of social support have been found to be related to better mental health outcomes among African Americans compared to non-Hispanic White individuals (Matthews et al., 2012).

### *Implications*

The results of the current study suggest that cultural vulnerability factors play a role in general quality of life outcomes among ethnically diverse men diagnosed with PC. However, as was demonstrated in the current study, cancer fatalism and medical mistrust do not drive the relationship between ethnic group membership and quality of life. Specifically, ethnic group membership was not associated with quality of life outcomes when covariates were included in the model. However, differences in quality of life

scores were seen among ethnic groups when relevant covariates were taken into account. The finding that perceived support from the family was a significant positive correlate of emotional well-being may explain null findings when ethnicity was related to emotional well-being. The construct of familism (Sabogal et al., 1987), which perceived support from the family was derived from, deserves greater attention in future studies to examine its role on protecting against decrements in quality of life.

Lack of ethnic group differences in quality of life outcomes when controlling for relevant covariates may be explained by the uniqueness of the current sample. The distribution of ethnic group membership was disproportionate by recruitment site. For example, the vast majority of African Americans in the current sample were recruited from the Miami VA hospital (i.e., 76%). In contrast, less than 20% of Hispanic men were recruited from the VA hospital. Most Hispanic men were recruited from the UM clinics (52%) and over one quarter were recruited from JMH (29%). Nearly all non-Hispanic White men were recruited from UM (49%) and the VA hospital (49%). As for African Americans primarily recruited from the VA hospital, quality of life outcomes may be comparable to those of non-Hispanic White men as the VA may provide men with a sense of community, ongoing support, and access to healthcare as needed. Quality of life outcomes for Hispanics may also be comparable to those of non-Hispanic White men as most had means to access care from a private hospital (whether by having insurance or financial resources), which may have protected them from experiencing challenges, such as having no assigned physician for follow-up care. This has implications for impacting quality of life, as men may feel less comfortable discussing sensitive illness-related issues with a provider they have not had an opportunity to establish trust.

Additional variability was seen in education level across ethnic groups.

Approximately 64% of non-Hispanic White men in the current sample had at least a high school diploma compared to 49% of Hispanic and 30% of African American men.

Income distribution also varied greatly with most non-Hispanic White men reporting total combined family incomes of greater than \$50,000 (25%) and \$100,000 (27%) per year.

Hispanic men reported the lowest rates of income greater than \$50,000 (15.6%) and \$100,000 (14.3%) per year. Over 28% of African American men reported earning more than \$50,000 and only 8.8% reported making greater than or equal to \$100,000. Despite differences in objective indicators of socioeconomic status, level of subjective social status (shown to have a stronger association with health-related outcomes; Cundiff et al. 2013) was comparable across ethnic groups.

The current study also provided evidence for significant relationships between ethnic group membership and cultural vulnerability factors. Hispanic PC survivors reported significantly greater levels of cancer fatalism and medical mistrust than non-Hispanic White men. Additionally, African American men endorsed greater medical mistrust than non-Hispanic White men. The results highlight distinct beliefs and attitudes ethnic minority men have increase their likelihood of not feeling supported by their doctor, feeling suspicious about treatment, and perceiving disparities in the way they are treated versus people from other groups (e.g., non-Hispanic White men). In addition, the current study found that Hispanic men in particular endorsed greater fatalistic views about cancer than African American (consistent with Powe et al., 2009) and non-Hispanic White men. This is the first study to explore fatalistic beliefs about cancer among men recently diagnosed with PC. Future research would benefit from assessing the role of

fatalism as it pertains to post-diagnosis well-being and adjustment. We currently know that greater fatalistic views are associated with barriers to cancer screening (Powe & Finnie, 2003; Powe & Johnson, 1995); however, little is known about its impact in men post PC diagnosis.

Although cancer fatalism has traditionally been conceptualized as a risk factor for poorer adjustment to cancer, it is worth exploring an alternative view of fatalism as a protective factor. In a study that examined relationships between spirituality, quality of life, and adjustment to a breast cancer diagnosis, results indicated a significant positive relationship between cancer fatalism and quality of life (Cotton, Levine, Fitzpatrick, Dold, & Targ, 1999). The authors proposed that due to the positive association between fatalism and spirituality, fatalistic views may provide protection against quality of life decrements by providing survivors with a greater sense of acceptance and tendency to express gratitude for blessings when faced with a cancer diagnosis. Potential protective effects of cancer fatalism on adjustment to cancer among males remains to be explored.

Most importantly, the present study found significant relationships between medical mistrust and emotional well-being, where greater levels of medical mistrust were related to poorer physical and emotional well-being. Of note, the directionality of the relationship remains to be determined as it is not clear from the cross-sectional analyses in the current study whether greater levels of medical mistrust cause poorer quality of life outcomes or whether poorer quality of life increases perceptions about mistrust in the health care system and medical providers. Data collected from the longitudinal study “Ethnicity and Determinants of Quality of Life Following Prostate Cancer Treatment”

(NCI grant R01-CA114412) would be needed in order to test the directionality of these variables.

The current study addressed gaps in the current literature by examining correlates of quality of life among ethnically diverse men diagnosed with PC. The study's findings provide support for continuing to explore the impact of culture-specific factors on well-being. Understanding the role of cultural vulnerability factors may help clinicians identify risk factors for decrements in quality of life following treatment, as have been found in previous studies.

### *Limitations*

Due to the cross-sectional nature of the current study, causal relationships amongst variables cannot be determined. Findings should be interpreted with caution as the study provides correlational rather than temporal information about the relationships between study variables. Future studies should replicate study aims using a longitudinal design in order to address issues related to directionality of variables.

The current study included participants from a variety of ethnic backgrounds. However, the ethnic group membership categories are limited in that ethnic minority subgroups may be widely heterogeneous. For example, the Hispanic subgroup did not take racial variation (i.e., Black, White, or mixed) or region of origin into account (e.g., Caribbean, Central America, or South America). Additionally, the number of years lived in the US among Hispanic men varied greatly, with an average of 30.97 years in the US (SD= 16.34). Whereas Hispanic men were categorized into the Hispanic group based on ethnicity, African American were categorized based on race and non-identification with Hispanic ethnicity. This poses a challenge in making interpretations about the African

American subgroup as Black men may have significantly varied origins and cultures (e.g., African American vs. Caribbean Islander). Although dividing men into sub-categories would have provided novel descriptive information, the findings may not have been meaningful as subgroups would have been too small to allow for making conclusions about these groups. Future studies with larger sample sizes may account for these ethnic differences. The generalizability of the current study's findings are limited to men that identified with either non-Hispanic White, Hispanic, or African American ethnic groups, as those who self-identified as American Indian, Asian, Mixed, or "other" were excluded from the current study.

An additional limitation of the study's findings is related to data collection procedures used in the current study, which may have contributed to high levels of missing data for some variables. Patients were allowed to complete full assessments in face-to-face format or by mail. In addition, some participants (as a result of their self-reported preference) completed an abbreviated version of the full battery, which resulted in missing data. Highest levels of missing data occurred for religious behavior (22.39%), PSA level at diagnosis (20.89%), and time since diagnosis (19.03%). Time since diagnosis and PSA level at diagnosis both had large standard deviations, suggesting that participants' values on these measures varied greatly from their respective means.

The current study also lacked information related to patient's status on treatment decision process (i.e., whether they were contemplating treatment, had selected and were scheduled to receive active treatment, or had chosen to undergo active surveillance). Although all the men in the study shared the experience of being diagnosed and living with an active cancer, the participants varied by those who had initiated active

surveillance, were undecided about treatment type (active treatment or active surveillance), or were waiting to receive scheduled active treatment. Future studies should control for treatment decision stage as this may impact quality of life outcomes.

### Limitations of Measures

Furthermore, there were limitations regarding some of the measures used in the current study. For example, the fatalism scale used in the current study varied from the original measure published by Powe (1995) in that the original measure used a “yes/no” scale with a maximum possible score of 15. However, the current study used a Likert-type scale to assess the degree to which participants agreed or disagreed with each of the 15 statements. The Likert-type response scale has been used in a previous study (e.g., Odedina et al., 2011); however, the researchers used only three of the 15 items in the original measure. Given these discrepancies, the scores generated in the current study are not comparable to previously published studies.

The study used one of the subscales from the Ironson-Woods Spirituality/Religiosity Index (Ironson et al., 2002) to measure religious behavior as an indicator of a culturally protective factor. However, Ironson et al. found that protective effects on health are not fully accounted for by religious behavior. For example, social support associated with religious behavior may help alleviate distress rather than religious behavior itself. A further limitation was the use of language preference as a proxy for acculturation. Future studies should assess acculturation using validated measures that tap into the multiple facets of acculturation [e.g., Short Acculturation Scale for Hispanics (SASH) by Marin et al., 1987; and African American Acculturation Scale

(AAAS) by Klonoff & Landrine, 2000]. An additional flaw regarding language preference as a proxy for acculturation is that it is unknown whether participants who chose to complete assessments in Spanish were monolingual Spanish speakers or bilingual.

### *Future Directions*

Findings from the present study make a significant contribution to the current literature on ethnicity and general quality of life outcomes among ethnically diverse men diagnosed with PC. Results of the current study have implications for future research and psychosocial interventions aimed at improving quality of life outcomes by identifying culturally relevant correlates of well-being during the pre-treatment and active surveillance experience following a PC diagnosis. Despite the need for additional research to confirm results from the present study, the findings expand knowledge related to the PC survivorship experience of non-Hispanic White, African American, and Hispanic men.

Future research should examine the relationships between ethnic group membership, cultural vulnerability factors, and general quality of life using a longitudinal design. The time since diagnosis varied greatly among participants in the current study. Future studies should aim to assess whether level of cultural vulnerability factors prior to treatment predict post-treatment quality of life. A longitudinal design can also be used to assess whether levels of cultural vulnerability and quality of life at diagnosis predict quality of life over time, independent of treatment, as some men will not go on to undergo active treatment (e.g., opt for active surveillance).

Future studies should also obtain information related to the treatment decision process (e.g., the treatments men are offered after receiving a PC diagnosis and factors that impact treatment decision) as well as treatment type selected by participants. Differences in PC-related treatment selection have been found among ethnic groups. For example, non-Hispanic White men are three times more likely to opt for radical prostatectomy, while African Americans are more likely to select radiation therapy (Peay et al., 2009). African American men are also less likely to be offered curative PC-related treatment option by their urologists compared to non-Hispanic White men. In addition, treatment selection has shown to vary by socioeconomic status, as patients with lower socioeconomic levels are less likely to undergo radical prostatectomy (Coopenberg et al, 2004). Given socioeconomic disadvantages among ethnic minorities, it is important to evaluate factors that may contribute to these disparities.

The current study contributed information about pre-treatment general quality of life (specifically, physical and emotional well-being domains). In order to get a more comprehensive assessment of pre-treatment general quality of life, it may also be of value to explore social and functional well-being at baseline, assess whether ethnic disparities exist in these domains prior to prostate cancer treatment, and identify whether cancer fatalism and medical mistrust impact these constructs. Future research should also explore pre-treatment disease-specific quality of life at diagnosis to expand upon pre-treatment general quality of life findings. PC survivors have reported prostate cancer-related symptoms (e.g., urinary incontinence) prior to treatment (e.g., Reeve 2012). A comprehensive evaluation of general and disease-specific functioning at baseline may

have important implications for men as they go through treatment decision process and ultimately undergo treatment.

The current study provided novel information about the role of culturally specific variables as they relate to quality of life outcomes, specifically, emotional well-being. Given that ethnic minority men were more likely to endorse greater levels of cancer fatalism and medical mistrust, findings from the current study provide support for culturally sensitive interventions aimed at reducing levels of cultural vulnerability factors among men diagnosed with PC to promote emotional well-being and survival outcomes. Cognitive-behavioral interventions that explore and challenge the survivors' fatalistic attitudes about cancer as well as mistrusting beliefs about the healthcare system may promote more balanced views about PC cancer diagnosis and treatment. Interventions aimed at increasing survivors' comfort with utilizing social support resources may also protect against poor emotional well-being outcomes. Additionally, researchers should conduct follow-up studies using a longitudinal design to determine whether greater levels of perceived support from the family after PC diagnosis among Hispanic PC cancer survivors predict favorable levels of emotional well-being following PC treatment. Such a study would provide support for identifying protective factors and implementing interventions that that may improve adjustment to PC diagnosis and treatment among ethnic minority men.

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**Appendix**  
**MacArthur Scale of Subjective Social Status**

Question 1

**Think of this ladder as representing where people stand in their communities.**

People define community in different ways; please define it in whatever way is most meaningful to you. At the **top** of the ladder are the people who have the highest standing in their community. At the **bottom** are the people who have the lowest standing in their community.

**Where would you place yourself on this ladder?**

Please place a large "X" on the rung where you think you stand at this time in your life, relative to other people in your community.



## MacArthur Scale of Subjective Social Status (continued)

### Question 2

**Think of this ladder as representing where people stand in the United States.**

At the **top** of the ladder are the people who are the best off – those who have the most money, the most education and the most respected jobs. At the **bottom** are the people who are the worst off – who have the least money, least education, and the least respected jobs or no job. The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.

**Where would you place yourself on this ladder?**

Please place a large "X" on the rung where you think you stand at this time in your life, relative to other people in the United States.



## Cuestionario Sociodemográfico De La Red MacArthur

### Pregunta 1

**Piense en esta escalera como representativa de la posición que ocupan las personas en sus comunidades.**

La gente define a la comunidad de diferentes maneras; defínala en la forma que tenga más sentido para usted. En la parte más alta de la escalera se encuentran las personas que ocupan la mejor posición social y económica en sus comunidades. En la parte inferior de la escalera se ubican las personas con más baja posición social y económica en sus comunidades.

**¿Dónde se posicionaría usted en esta escalera?**

Coloque una "X" grande en el peldaño donde usted considera que debe pararse en este momento de su vida, respecto de otras personas de su comunidad.



## Cuestionario Sociodemográfico De La Red MacArthur (continuado)

### Pregunta 2

**Piense en esta escalera como representativa de la posición que ocupan las personas en los Estados Unidos de América.**

En la parte más alta de la escalera se encuentran las personas de mejor pasar – quienes tienen más dinero, más nivel educativo y empleos de mejor reputación. En la parte inferior de la escalera se ubican las personas en peores condiciones – quienes tienen menos dinero, menos nivel educativo y los empleos de peor reputación o están desempleados. Cuanto más alto se posicione en esta escalera, más cerca estará de las personas en la cima; cuanto más bajo se posicione, más cerca se encontrará de quienes están en la parte inferior de la escalera.

**¿Dónde se posicionaría usted en esta escalera?**

Coloque una “X” grande en el peldaño donde usted considera que debe pararse en este momento de su vida, respecto de otras personas en los Estados Unidos de América.



## Familism Inventory

Please show how much you agree or disagree with these statements by circling the number from 1 (very much in disagreement) to 5 (very much in agreement) which best shows how you feel about each statement.

- 1 = Very much in disagreement
- 2 = In disagreement
- 3 = Neither in agreement or disagreement
- 4 = In agreement
- 5 = Very much in agreement

### Perceived Support from the Family Subscale

1. When someone has problems she/he can count on help from his/her relatives.
2. When one has problems, one can count on the help of relatives.
3. One can count on help from his/her relatives to solve most problems.

### Familismo

Por favor, demuestre su grado de acuerdo o desacuerdo con estas declaraciones, encerrando en un círculo el número 1 (totalmente en desacuerdo) al 5 (totalmente de acuerdo) según su sentir respecto a cada declaración.

- 1 = Totalmente en desacuerdo
- 2 = En desacuerdo
- 3 = Ni de acuerdo ni en desacuerdo
- 4 = De acuerdo
- 5 = Totalmente de acuerdo

#### Apoyo Percibido de la Familia (Sub-escala)

1. Cuando alguien tiene problemas el/ella pueden contar en ayuda de su familia.
2. Cuando uno tiene problemas pueden contar en la ayuda de familia.
3. Uno puede contar en ayuda de familia para resolver muchos problemas.

**Ironson-Woods Spirituality/Religiosity Index**  
**Religious Behavior Subscale**

Please respond to the following statements, indicating how strongly you agree with that statement. For example, if you *strongly disagree* with the statement, circle 1. Likewise, if you *strongly agree* with the statement, please circle 5. If your feelings lie somewhere in the middle, please indicate by circling 2, 3, or 4, depending on whether you *somewhat agree* or *disagree*.

- 1= Strongly disagree
- 2= Disagree
- 3= Neutral
- 4= Agree
- 5= Strongly agree

1. I attend religious services.
2. I participate in religious rituals.
3. I pray or meditate to get in touch with God.
4. I discuss my beliefs with others who share my beliefs.
5. My beliefs give me a set of rules I must obey.

### Escala De Comportamiento Religioso De Ironson-Woods

Responda a las siguientes afirmaciones indicando qué grado de acuerdo tiene con esa afirmación. Por ejemplo, si usted está en *total desacuerdo* con la afirmación, haga un círculo en el 1. De la misma forma, si usted está en *total acuerdo* con la afirmación, haga un círculo en el 5. Si siente que, en cierto modo, su grado de acuerdo es intermedio, indíquelo haciendo un círculo en el 2, 3 o 4, dependiendo de si está *algo en acuerdo o algo en desacuerdo*.

- 1= En total desacuerdo
- 2= En desacuerdo
- 3= Neutral
- 4= De acuerdo
- 5= Totalmente de acuerdo

1. Asisto a servicios religiosos.
2. Participo en ritos religiosos.
3. Rezo o medito para entrar en contacto con Dios.
4. Comento mis creencias con quienes las comparten.
5. Mis creencias tienen un conjunto de reglas que debo obedecer.

### Powe Fatalism Inventory (PFI)

Please show how much you agree or disagree with these statements by circling the number from 1 (very much in disagreement) to 5 (very much in agreement) which best shows how you feel about each statement.

- 1 = Very much in disagreement
- 2 = In disagreement
- 3 = Neither in agreement or disagreement
- 4 = In agreement
- 5 = Very much in agreement

1. I think if someone is meant to have prostate cancer, it doesn't matter what types of food they eat, they will get prostate cancer anyway.
2. I think if someone has prostate cancer, it is already too late to get treated for it.
3. I think someone can eat fatty foods all their life, and if they are not meant to get prostate cancer, they won't get it.
4. I think if someone is meant to get prostate cancer, they will get it no matter what they do.
5. I think if someone gets prostate cancer, it was meant to be.
6. I think if someone gets prostate cancer, their time to die is soon.
7. I think if someone gets prostate cancer, that's the way they were meant to die.
8. I think getting checked for prostate cancer makes people scared that they may really have prostate cancer.
9. I think if someone is meant to have prostate cancer, they will have prostate cancer.
10. I think some people don't want to know if they have prostate cancer because they don't want to know they may be dying from it.
11. I think if someone gets prostate cancer, it doesn't matter whether they find it early or late, they will still die from it.
12. I think if someone has prostate cancer and gets treatment for it, they will probably still die from the prostate cancer.
13. I think if someone was meant to have prostate cancer, it doesn't matter what doctors and nurses tell them to do, they will get prostate cancer anyway.
14. I think if someone is meant to have prostate cancer, it doesn't matter if they eat healthy foods, they will still get prostate cancer.
15. I think prostate cancer will kill you no matter when it is found and how it is treated.

### Fatalismo

Por favor, demuestre su grado de acuerdo o desacuerdo con estas declaraciones, encerrando en un círculo el número 1 (totalmente en desacuerdo) al 5 (totalmente de acuerdo) según su sentir respecto a cada declaración.

- 1 = Totalmente en desacuerdo
- 2 = En desacuerdo
- 3 = Ni de acuerdo ni en desacuerdo
- 4 = De acuerdo
- 5 = Totalmente de acuerdo

1. Pienso que si alguien está destinado a tener cáncer de próstata, no importa qué alimentos consuma, de todos modos tendrá cáncer de próstata.
2. Pienso que si alguien tiene cáncer de próstata, ya es demasiado tarde para que se lo trate.
3. Pienso que una persona puede ingerir alimentos grasos toda su vida y si no está destinada a tener cáncer de próstata, no lo tendrá.
4. Pienso que si alguien está destinado a tener cáncer de próstata, lo tendrá sin importar lo que haga.
5. Pienso que si alguien tiene cáncer de próstata, estaba destinado a tenerlo.
6. Pienso que si alguien tiene cáncer de próstata, su tiempo de morir se aproxima.
7. Pienso que si alguien tiene cáncer de próstata, esa es la manera en la que estaba destinado para morir.
8. Pienso que realizarse una revisión para detectar el cáncer de próstata asusta a la gente de que realmente tiene cáncer de próstata.
9. Pienso que si alguien está destinado para tener cáncer de próstata, tendrá cáncer de próstata.
10. Pienso que algunas personas no desean saber si tienen cáncer de próstata porque no quieren saber que podrán morir a causa del mismo.
11. Pienso que si alguien tiene cáncer de próstata, no importa si se lo encuentran temprano o tarde, de todos modos morirá por causa del mismo.
12. Pienso que si alguien tiene cáncer de próstata y recibe tratamiento, probablemente de todos modos morirá a causa del mismo.
13. Pienso que si alguien está destinado a tener cáncer de próstata, no importa qué le digan los doctores y enfermeras que tiene que hacer, de todos modos tendrá cáncer de próstata.
14. Pienso que si alguien está destinado a tener cáncer de próstata, no importa si consume alimentos saludables, de todos modos tendrá cáncer de próstata.
15. Pienso que el cáncer de próstata lo matará a uno sin importar cuándo se detecte y cómo se trate.

### Group Based Medical Mistrust Scale (GBMMS)

Please use the numbers below to answer the following questions.

- 1= Strongly disagree
- 2= Disagree
- 3= Neither agree nor disagree
- 4= Agree
- 5= Strongly agree

1. Doctors and health care workers sometimes hide information from patients who belong to my ethnic group.
2. Doctors have the best interests of people of my ethnic group in mind.
3. People of my ethnic group should not confide in doctors and health care workers because it will be used against them.
4. People of my ethnic group should be suspicious of information from doctors and health care workers.
5. People of my ethnic group cannot trust doctors and health care workers.
6. People of my ethnic group should be suspicious of modern medicine.
7. Doctors and health care workers treat people of my ethnic group like “guinea pigs.”
8. People of my ethnic group receive the same medical care from doctors and health care workers as people from other groups.
9. Doctors and health care workers do not take the medical complaints of people of my ethnic group seriously.
10. People of my ethnic group are treated the same as people of other groups by doctors and other health care workers.
11. In most hospitals, people of different ethnic groups receive the same kind of care.
12. I have personally been treated poorly or unfairly by doctors or health care workers because of my ethnicity.

### GBMMS (Spanish Version)

Por favor, use los números de abajo para contestar las siguientes preguntas.

- 1 = Totalmente en desacuerdo
- 2 = En desacuerdo
- 3 = Ni de acuerdo ni en desacuerdo
- 4 = De acuerdo
- 5 = Totalmente de acuerdo

1. Los doctores y profesionales del cuidado de la salud a veces esconden información a los pacientes que pertenecen a mi grupo étnico.
2. Los doctores tienen en mente los mejores intereses de la gente de mi grupo étnico.
3. La gente de mi grupo étnico no debería confiar en doctores ni profesionales del cuidado de la salud, ya que esto se usaría en su contra.
4. La gente de mi grupo étnico debería sospechar de la información proporcionada por doctores y profesionales del cuidado de la salud.
5. La gente de mi grupo étnico no puede confiar en doctores y profesionales del cuidado de la salud.
6. La gente de mi grupo étnico debería sospechar de la medicina moderna.
7. Los doctores y profesionales del cuidado de la salud tratan a la gente de mi grupo étnico como “conejiillos de Indias”.
8. La gente de mi grupo étnico recibe la misma atención médica de parte de doctores y profesionales del cuidado de la salud que la gente de otros grupos.
9. Los doctores y profesionales del cuidado de la salud no toman en serio las quejas médicas de la gente de mi grupo étnico.
10. La gente de mi grupo étnico es tratada de la misma manera que la gente de otros grupos por doctores y otros profesionales del cuidado de la salud.
11. En la mayoría de los hospitales, la gente de distintos grupos étnicos recibe el mismo tipo de atención.
12. Personalmente, doctores o profesionales del cuidado de la salud me han tratado mal o injustamente debido a mi grupo étnico.

**Functional Assessment of Cancer Therapy- General (FACT-G)**  
**Physical and Emotional Well-being Subscales**

Below is a list of statements that other men with prostate cancer have said are important. Please indicate how true each statement has been for you *during the past 7 days*.

- 1 = Not at all
- 2 = A little bit
- 3 = Somewhat
- 4 = Quite a bit
- 5 = Very much

Physical Well-being

1. I have a lack of energy.
2. I have nausea.
3. Because of my physical condition, I have trouble meeting the needs of my family.
4. I have pain.
5. I am bothered by side effects of treatment.
6. I feel ill.
7. I am forced to spend time in bed.

Emotional Well-being

1. I feel sad.
2. I am satisfied with how I am coping with my illness.
3. I am losing hope in the fight against my illness.
4. I feel nervous.
5. I worry about dying.
6. I worry that my condition will get worse.

**Functional Assessment of Cancer Therapy- General (FACT-G) Spanish Version**  
**Bienestar Físico y Emocional (Sub-escalas)**

A continuación, se ofrece una lista de afirmaciones que otros individuos con cáncer de próstata han considerado importantes. Indique cuán cierta ha sido cada afirmación para usted *durante los últimos 7 días*.

- 1 = Nada cierta
- 2 = Algo cierta
- 3 = Moderadamente cierta
- 4 = Bastante cierta
- 5 = Muy cierta

Bienestar Físico

- 1. Me faltan energías.
- 2. Tengo náuseas.
- 3. Debido a mi estado físico, me cuesta satisfacer las necesidades de mi familia.
- 4. Siento dolor.
- 5. Me molestan los efectos colaterales del tratamiento.
- 6. Me siento enfermo.
- 7. Debo pasar tiempo en cama.

Bienestar Emocional

- 1. Estoy triste.
- 2. Estoy conforme con la manera en que estoy sobrellevando mi enfermedad.
- 3. Estoy perdiendo esperanzas en la lucha contra mi enfermedad.
- 4. Estoy nervioso.
- 5. Me preocupa la muerte.
- 6. Me preocupa empeorar.

Completion Date:



Attachment 46  
Authorization for 3rd Party Disclosures

I authorize the use or disclosure of health information about me as described below.

1. Person(s) or class of persons authorized to use or disclose the information (e.g., medical records department, physician):

Dr. Soloway

2. Person(s) or class of persons authorized to receive the information (e.g., family member, attorney, employer, researcher):

Frank Penedo, Ph.D., Principal Investigator

If you would like your records to be sent to a third party, please provide an address or fax where you would like us to send the information. Please attach additional pages if more than one third party.

Name: Frank Penedo Ph.D. Phone: \_\_\_\_\_  
Address: CRB:1120 NW 14<sup>th</sup> St, 73136 (C-202) Fax: \_\_\_\_\_

3. Description of information that may be used or disclosed (e.g., all information related to a specific type of treatment):

Information related to prostate cancer diagnosis and treatment.

4. The information will be used or disclosed for the following purposes (Note: if a patient initiates the request, the statement "at the request of the patient" is sufficient):

Quality of Life Study: "Ethnicity and Determinants of QoL Following PCa Treatment"

5. I understand that if the person or entity that receives the information is not a health care provider or health plan covered by federal privacy regulations, the information described above may be redisclosed and no longer protected by these regulations.

6. [If applicable] The disclosure of my information for marketing purposes is expected to result in a direct or indirect financial benefit to \_\_\_\_\_ [insert the name of the disclosing covered entity].

7. I understand that I may refuse to sign this authorization and that my refusal to sign will not affect my ability to obtain treatment or payment, enrollment, or my eligibility for benefits.

8. I understand that I may revoke this authorization at any time by sending a written request to the University of Miami privacy officer, except to the extent that action has been taken in reliance on this authorization.

9. This authorization expires 6 months after study completion date [insert a date or describe an event or activity related to the patient or purpose of the authorization]. If not completed, this authorization will expire one year from date signed.

Signature of Patient or Representative _____	Date _____
Patient Name _____	Patient Address _____
Patient Contact Phone Number _____	Last 4 Digits of SSN _____ Date of Birth _____
Name of Personal Representative (if applicable) _____	Relationship to Patient _____

University of Miami – Office of HIPAA Privacy & Security  
PO Box 019132 (M-879) hipaaprivacy@med.miami.edu  
Miami, FL 33101 305-243-5000 1-866-366-4874

AUTHORIZATION FOR 3RD PARTY DISCLOSURES



Form D3900052E  
Revised 5/13/09

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Table 1

*Derivation of Study Sample by Recruitment Site*

	UM/JMH	VA	Total
Total Number Screened	519	378	897
Ineligible	177	193	370
Eligible	342	185	527
Refused to Participate (otherwise eligible)	123	24	147
Enrolled in the Study	219	161	380
Withdrawn/Dropped/Lost to Follow-up	16	16	32
Enrolled in the Study Post-Treatment/ No Baseline Assessment	62	13	75
Completed Baseline Assessment	<b>141</b>	<b>132</b>	<b>273</b>

Table 2

*Ethnic Group Membership Distribution by Recruitment Site*

	Frequency	Percent
<u>Non-Hispanic White</u>		
UM/SCCC	54	49%
JMH	2	2%
VA Medical Center	55	49%
<i>Total</i>	<i>111</i>	<i>100%</i>
<u>Hispanic</u>		
UM/SCCC	40	52%
JMH	22	29%
VA Medical Center	15	19%
<i>Total</i>	<i>77</i>	<i>100%</i>
<u>African American</u>		
UM/SCCC	13	16%
JMH	6	8%
VA Medical Center	61	76%
<i>Total</i>	<i>80</i>	<i>100%</i>

Table 3

*Descriptive Statistics for Sociodemographic, Medical, and Psychosocial Variables*

Total Sample (N=268) Variable	<i>Mean</i>	<i>SD</i>
Age (years)	63.42	(7.83)
Subjective Social Standing	6.71	(1.81)
Time since diagnosis (months)	11.64	(19.74)
PSA level at diagnosis (ng/mL)	8.38	(14.13)
Medical co-morbidity index	2.11	(2.51)
Perceived Support from Family	11.12	(2.51)
Ironson-Woods Religious Behavior	14.83	(5.98)
PFI Cancer Fatalism	34.47	(9.53)
GBMMS Medical Mistrust	23.80	(7.61)
FACT-G Physical well-being	25.26	(3.90)
FACT-G Emotional well-being	19.56	(4.28)
	<i>N</i>	<i>Percentage</i>
Ethnicity/Race		
Non-Hispanic White	111	41.42%
Hispanic	77	28.73%
African American/ Black	80	29.85%
Language Preference		
English	227	84.70%
Spanish	41	15.30%
Partner status		
Single, never married	27	10.07%
Married/equivalent relationship	162	60.45%
Dating	3	1.12%
Separated/Divorced	64	23.88%
Widowed	10	3.73%
(Missing)	(2)	(0.75%)
Education (highest degree)		
Less than high school	18	6.72%
High school diploma or equivalent	107	39.93%
Associate degree or 2-year technical degree	37	13.80%
Bachelor's degree	60	22.39%
Graduate degree	32	11.94%
(Missing)	(14)	(5.22%)
Total combined family income		
≤ \$24,999	73	27.24%
\$25,000 – \$49,999	57	21.27%
\$50,000 – \$99,999	63	23.51%
≥ \$100,000	48	17.91%
(Missing)	(27)	(10.07%)

Table 4

*Descriptive Statistics for Sociodemographic, Medical, and Psychosocial Variables by Ethnic Group*

Variable	Mean	SD
Age		
Non-Hispanic White	65.37	(8.23)
Hispanic	61.77	(7.78)
African American/ Black	62.30	(6.74)
Subjective Social Standing		
Non-Hispanic White	7.10	(1.65)
Hispanic	6.26	(1.93)
African American/ Black	6.59	(1.80)
Time since Diagnosis (months)		
Non-Hispanic White	16.00	(24.97)
Hispanic	10.10	(16.18)
African American/ Black	7.08	(12.21)
PSA level at diagnosis (ng/mL)		
Non-Hispanic White	8.44	(19.15)
Hispanic	6.76	(7.73)
African American/ Black	9.82	(9.91)
Medical co-morbidity index		
Non-Hispanic White	1.99	(2.37)
Hispanic	2.02	(2.32)
African American/ Black	2.35	(2.87)
Perceived Support from Family		
Non-Hispanic White	10.77	(2.29)
Hispanic	11.86	(2.71)
African American/ Black	10.95	(2.51)
Ironson-Woods Religious Behavior		
Non-Hispanic White	13.16	(5.87)
Hispanic	15.30	(5.84)
African American/ Black	16.87	(5.64)
PFI Cancer Fatalism		
Non-Hispanic White	33.42	(8.63)
Hispanic	36.63	(10.51)
African American/ Black	34.05	(9.69)
GBMMS Medical Mistrust (Total)		
Non-Hispanic White	21.95	(7.45)
Hispanic	25.11	(7.49)
African American/ Black	25.26	(7.48)
FACT-G Physical well-being		
Non-Hispanic White	26.05	(2.87)
Hispanic	24.28	(5.24)
African American/ Black	25.08	(3.43)
FACT-G Emotional well-being		
Non-Hispanic White	19.48	(4.14)
Hispanic	18.85	(4.99)
African American/ Black	20.36	(3.60)

Table 5

*Post-hoc Comparison Statistics for Covariate Analyses by Ethnic Group*

	<i>Mean Difference</i>	<i>p</i>
<b>Age</b>		
<b>Non-Hispanic White &gt; Hispanic</b>	<b>3.60</b>	<b>.00**</b>
<b>Non-Hispanic White &gt; African American/ Black</b>	<b>3.07</b>	<b>.01*</b>
Hispanic vs. African American/ Black	.53	.66
<b>Subjective Social Standing</b>		
<b>Non-Hispanic White &gt; Hispanic</b>	<b>0.84</b>	<b>.00**</b>
Non-Hispanic White vs. African American/ Black	0.51	.05
Hispanic vs. African American/ Black	0.33	.26
<b>Perceived Support from Family</b>		
<b>Non-Hispanic White &lt; Hispanic</b>	<b>1.08</b>	<b>.01*</b>
Non-Hispanic White vs. African American/ Black	0.17	.64
<b>African American/ Black &lt; Hispanic</b>	<b>1.08</b>	<b>.03*</b>
<b>Ironson-Woods Religious Behavior</b>		
<b>Non-Hispanic White &lt; Hispanic</b>	<b>2.14</b>	<b>.03*</b>
<b>Non-Hispanic White &lt; African American/ Black</b>	<b>3.71</b>	<b>.00**</b>
Hispanic vs. African American/ Black	1.57	.15
<b>Time since Diagnosis (months)</b>		
Non-Hispanic White vs. Hispanic	5.90	.07
<b>Non-Hispanic White &gt; African American/ Black</b>	<b>8.92</b>	<b>.01*</b>
Hispanic vs. African American/ Black	3.02	.38

\*  $p < .05$   
 \*\*  $p < .01$

Table 6

*Correlations Between Sociodemographic, Medical, and Psychosocial Covariates, Medical Mistrust, Cancer Fatalism, and Quality of Life in Full Sample*

	Phy QOL	Emo QOL	Mistrust	Fatalism	Familism	Age	SSS	Rel Beh	Time Dx	Comorbid	PSA dx	Lang
Phy QOL	—											
Emo QOL	<b>.39**</b>	—										
Mistrust	<b>-.16*</b>	<b>-.16*</b>	—									
Fatalism	<b>-.13*</b>	-.09	<b>.28**</b>	—								
Familism	.05	<b>.18**</b>	-.07	.08	—							
Age	.05	.05	.06	.08	-.11	—						
SSS	.10	.09	-.10	-.08	.04	.06	—					
Rel Beh	-.06	.08	.01	.05	.13	-.12	.03	—				
Time Dx	.06	.06	-.07	.02	.02	<b>.23**</b>	.05	-.03	—			
Comorbid	<b>-.12*</b>	-.03	.03	.08	-.08	<b>.13*</b>	-.07	.11	-.04	—		
PSA dx	-.01	-.05	.06	.01	-.14	.10	.00	.13	-.12	.01	—	
Lang	<b>-.16**</b>	<b>-.14*</b>	.10	.09	<b>.15*</b>	-.05	<b>-.26**</b>	.11	-.04	.12	-.03	—

\*  $p < .05$   
 \*\*  $p < .01$

Table 7

*Correlations Between Sociodemographic, Medical, and Psychosocial Covariates, Medical Mistrust, Cancer Fatalism, and Quality of Life in Non-Hispanic White Participants*

	Phy QOL	Emo QOL	Mistrust	Fatalism	Familism	Age	SSS	Rel Beh	Time Dx	Comorbid	PSA dx	Lang
Phy QOL	—											
Emo QOL	<b>.38**</b>	—										
Mistrust	<b>-.24*</b>	<b>-.35**</b>	—									
Fatalism	-.15	<b>-.28**</b>	<b>.45**</b>	—								
Familism	<b>.20*</b>	.14	<b>-.27**</b>	-.10	—							
Age	-.05	.01	.11	-.05	<b>-.26**</b>	—						
SSS	.02	<b>.19*</b>	<b>-.21*</b>	-.17	.19	.06	—					
Rel Beh	-.13	.14	-.07	.13	.12	<b>-.22*</b>	.14	—				
Time Dx	-.07	.02	.02	.05	-.07	<b>.25*</b>	-.06	.03	—			
Comorbid	-.11	.03	-.02	.00	-.06	<b>.19*</b>	-.04	.04	-.02	—		
PSA dx	-.06	.07	.12	.03	-.16	<b>.32**</b>	.04	.07	-.06	-0.01	—	

\*  $p < .05$   
\*\*  $p < .01$

Table 8

*Correlations Between Sociodemographic, Medical, and Psychosocial Covariates, Medical Mistrust, Cancer Fatalism, and Quality of Life in Hispanic Participants*

	Phy QOL	Emo QOL	Mistrust	Fatalism	Familism	Age	SSS	Rel Beh	Time Dx	Comorbid	PSA dx	Lang
Phy QOL	—											
Emo QOL	<b>.52**</b>	—										
Mistrust	-.10	-.01	—									
Fatalism	-.10	.06	.12	—								
Familism	-.04	<b>.25*</b>	-.01	.06	—							
Age	.09	.13	.03	.24	.16	—						
SSS	.16	.06	-.04	.12	-.09	-.04	—					
Rel Beh	.06	-.07	-.15	.11	.15	.13	-.08	—				
Time Dx	.16	<b>.27*</b>	<b>-.32*</b>	-.05	.17	.02	.13	-.01	—			
Comorbid	-.11	<b>-.26*</b>	.04	<b>.27*</b>	.07	<b>.25*</b>	-.05	.06	.02	—		
PSA dx	.03	-.15	.03	.14	-.15	.03	-.06	.15	-.24	-.03	—	
Lang	-.12	-.15	.09	-.01	.04	.16	<b>-.34**</b>	.22	-.01	<b>.32**</b>	.13	—

\*  $p < .05$

\*\*  $p < .01$

Table 9

*Correlations Between Sociodemographic, Medical, and Psychosocial Covariates, Medical Mistrust, Cancer Fatalism, and Quality of Life in African American Participants*

	Phy QOL	Emo QOL	Mistrust	Fatalism	Familism	Age	SSS	Rel Beh	Time Dx	Comorbid	PSA dx	Lang
Phy QOL	—											
Emo QOL	.19	—										
Mistrust	-.05	-.07	—									
Fatalism	-.10	.02	.16	—								
Familism	.08	.17	.05	<b>.24*</b>	—							
Age	-.03	.02	.21	.19	-.07	—						
SSS	-.03	-.03	.10	-.07	.10	.05	—					
Rel Beh	-.02	.07	-.01	-.24	.08	-.08	.11	—				
Time Dx	.08	-.04	.09	.02	.11	<b>.27*</b>	.14	.05	—			
Comorbid	-.16	.09	.05	.01	<b>-.25*</b>	-.04	-.12	.16	-.17	—		
PSA dx	-.08	-.23	-.06	-.10	-.05	-.16	-.01	.04	-.05	.04	—	

\*  $p < .05$

Table 10

*Model Results for the Relationship Between Ethnic Group Membership and Pre-Treatment Quality of Life (Specific Aim 1)*

	$\beta$	<i>p</i>
<i>Results for Hypothesis 1a: Ethnic group differences in Physical Well-being (non-Hispanic White Reference Group)</i>		
Covariates		
Demographic variables		
Language	-.07	.42
Age	.03	.64
Social status	.04	.50
Cultural protective factors		
Religious behavior	-.02	.77
Perceived family support	.07	.30
Medical variables		
PSA	-.02	.79
Time since diagnosis	.02	.76
Medical comorbidities	-.11	.11
Ethnic Group Membership		
Hispanic vs. non-Hispanic White	-.16	.07
African American vs. non-Hispanic White	-.09	.23
<i>Results for Hypothesis 1b: Ethnic group differences in Emotional Well-being (non-Hispanic White Reference Group)</i>		
Covariates		
Demographic variables		
Language	-.12	.13
Age	.08	.23
Social status	.05	.45
Cultural protective factors		
Religious behavior	.06	.46
<b>Perceived family support</b>	<b>.18</b>	<b>.01*</b>
Medical variables		
PSA	-.06	.42
Time since diagnosis	.04	.56
Medical comorbidities	-.01	.83
Ethnic Group Membership		
Hispanic vs. non-Hispanic White	-.01	.97
African American vs. non-Hispanic White	.11	.13

\*  $p < .05$

Table 10 (continued)

*Model Results for the Relationship Between Ethnic Group Membership and Pre-Treatment Quality of Life (Specific Aim 1)*

	$\beta$	$p$
<i>Results for Hypothesis 1c: Ethnic group differences in Physical Well-being (Hispanic Reference Group)</i>		
Covariates		
Demographic variables		
Language	-.07	.42
Age	.03	.64
Social status	.04	.50
Cultural protective factors		
Religious behavior	-.02	.77
Perceived family support	.07	.30
Medical variables		
PSA	-.02	.79
Time since diagnosis	.02	.76
Medical comorbidities	-.11	.11
Ethnic Group Membership		
African American vs. Hispanic	.07	.45

*Results for Hypothesis 1c: Ethnic group differences in Emotional Well-being (Hispanic Reference Group)*

Covariates		
Demographic variables		
Language	-.12	.13
Age	.08	.23
Social status	.05	.45
Cultural protective factors		
Religious behavior	.06	.46
<b>Perceived family support</b>	<b>.18</b>	<b>.01*</b>
Medical variables		
PSA	-.06	.42
Time since diagnosis	.04	.56
Medical comorbidities	-.01	.83
Ethnic Group Membership		
African American vs. Hispanic	.11	.23

\*  $p < .05$

Table 11

*Model Results for the Relationship Between Ethnic Group Membership and Cultural Vulnerability Factors (Specific Aim 2)*

	$\beta$	$p$
<i>Results for Hypothesis 2a:</i>		
<i>Ethnic group differences in Cancer Fatalism (non-Hispanic White Reference Group)</i>		
<b>Hispanic &gt; non-Hispanic White</b>	<b>.15</b>	<b>.03*</b>
African American vs. non-Hispanic White	.03	.66
<i>Results for Hypothesis 2b:</i>		
<i>Ethnic group differences in Medical Mistrust (non-Hispanic White Reference Group)</i>		
<b>Hispanic &gt; non-Hispanic White</b>	<b>.19</b>	<b>.00**</b>
<b>African American &gt; non-Hispanic White</b>	<b>.20</b>	<b>.00**</b>
<i>Results for Hypothesis 2c:</i>		
<i>Ethnic group differences in Cancer Fatalism (Hispanic Reference Group)</i>		
African American vs. Hispanic	-.12	.10
<i>Ethnic group differences in Medical Mistrust (Hispanic Reference Group)</i>		
African American vs. Hispanic	.01	.90
* $p < .05$		
** $p < .01$		

Table 12

*Model Results for the Relationship Between Cultural Vulnerability Factors and Pre-Treatment Quality of Life (Specific Aim 3)*

	$\beta$	$p$
<i>Results for Hypothesis 3a: Relationship between Cancer Fatalism and Physical Well-being</i>		
Covariates		
Demographic variables		
<b>Language</b>	<b>-.13</b>	<b>.04*</b>
Age	.06	.39
Social status	.04	.48
Cultural protective factors		
Religious behavior	-.05	.55
Perceived family support	.07	.27
Medical variables		
PSA	-.01	.94
Time since diagnosis	.04	.60
Medical comorbidities	-.09	.15
Cancer Fatalism	-.12	.06

*Results for Hypothesis 3b: Relationship between Cancer Fatalism and Emotional Well-being*

Covariates		
Demographic variables		
<b>Language</b>	<b>-.15</b>	<b>.01*</b>
Age	.08	.22
Social status	.03	.65
Cultural protective factors		
Religious behavior	.08	.30
<b>Perceived family support</b>	<b>.19</b>	<b>.01*</b>
Medical variables		
PSA	-.04	.57
Time since diagnosis	.03	.64
Medical comorbidities	-.01	.90
Cancer Fatalism	-.10	.11

\*  $p < .05$

Table 12 (continued)

*Model Results for the Relationship Between Cultural Vulnerability Factors and Pre-Treatment Quality of Life (Specific Aim 3)*

	$\beta$	$p$
<i>Results for Hypothesis 3c: Relationship between Medical Mistrust and Physical Well-being</i>		
Covariates		
Demographic variables		
Language	-.12	.05
Age	.06	.39
Social status	.04	.49
Cultural protective factors		
Religious behavior	-.05	.52
Perceived family support	.06	.41
Medical variables		
PSA	-.01	.99
Time since diagnosis	.02	.74
Medical comorbidities	-.10	.12
<b>Medical Mistrust</b>	<b>-.14</b>	<b>.03*</b>

*Results for Hypothesis 3d: Relationship between Medical Mistrust and Emotional Well-being*

Covariates		
Demographic variables		
<b>Language</b>	<b>-.15</b>	<b>.02*</b>
Age	.08	.21
Social status	.03	.68
Cultural protective factors		
Religious behavior	.07	.32
<b>Perceived family support</b>	<b>.18</b>	<b>.00**</b>
Medical variables		
PSA	-.03	.64
Time since diagnosis	.02	.80
Medical comorbidities	-.01	.86
<b>Medical Mistrust</b>	<b>-.13</b>	<b>.04*</b>

\*  $p < .05$

\*\*  $p < .01$

Table 13

*Model Results for Relationship Between Ethnic Group Membership, Cultural Vulnerability Factors, and Pre-Treatment Quality of Life Outcomes (Specific Aim 4)*

	<i>Physical Well-being<sup>a</sup></i>		<i>Emotional Well-being<sup>b</sup></i>	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>
<b>Covariates</b>				
Language	-.07	.41	-.12	.13
Age	.05	.45	.10	.12
Social status	.03	.61	.04	.56
Religious behavior	-.03	.72	.05	.53
Perceived family support	.07	.30	<b>.18</b>	<b>.01*</b>
PSA	-.01	.85	-.05	.46
Time since diagnosis	.02	.81	.03	.62
Medical comorbidities	-.10	.12	-.01	.89
<b>Direct Effects</b>				
Independent Variable (Ethnic Group Membership)				
Hispanic vs. non-Hispanic White	-.12	.16	.04	.66
African American vs. non-Hispanic White	-.06	.37	.14	.05
Mediators				
Medical Mistrust	-.10	.14	<b>-.14</b>	<b>.04*</b>
Cancer Fatalism	-.09	.16	-.07	.28
<b>Indirect Effects</b>				
Independent Variable: Hispanic vs. non-Hispanic White				
Specific Indirect Effect (via Medical Mistrust)	-.02	.19	-.03	.09
Specific Indirect Effect (via Cancer Fatalism)	-.01	.25	-.01	.33
Total Indirect Effect	-.03	.05	<b>-.04</b>	<b>.04*</b>
Independent Variable: African American vs. non-Hispanic White				
Specific Indirect Effect (via Medical Mistrust)	-.02	.18	-.03	.09
Specific Indirect Effect (via Cancer Fatalism)	-.01	.70	-.01	.70
Total Indirect Effect	-.02	.18	-.03	.09

<sup>a</sup> Results for Hypothesis 4a: Ethnic group differences in Physical well-being mediated by Cancer Fatalism and Medical Mistrust (non-Hispanic White Reference Group)

<sup>b</sup> Results for Hypothesis 4b: Ethnic group differences in Emotional well-being mediated by Cancer Fatalism and Medical Mistrust (non-Hispanic White Reference Group)

\*  $p < .05$

Table 13 (continued)

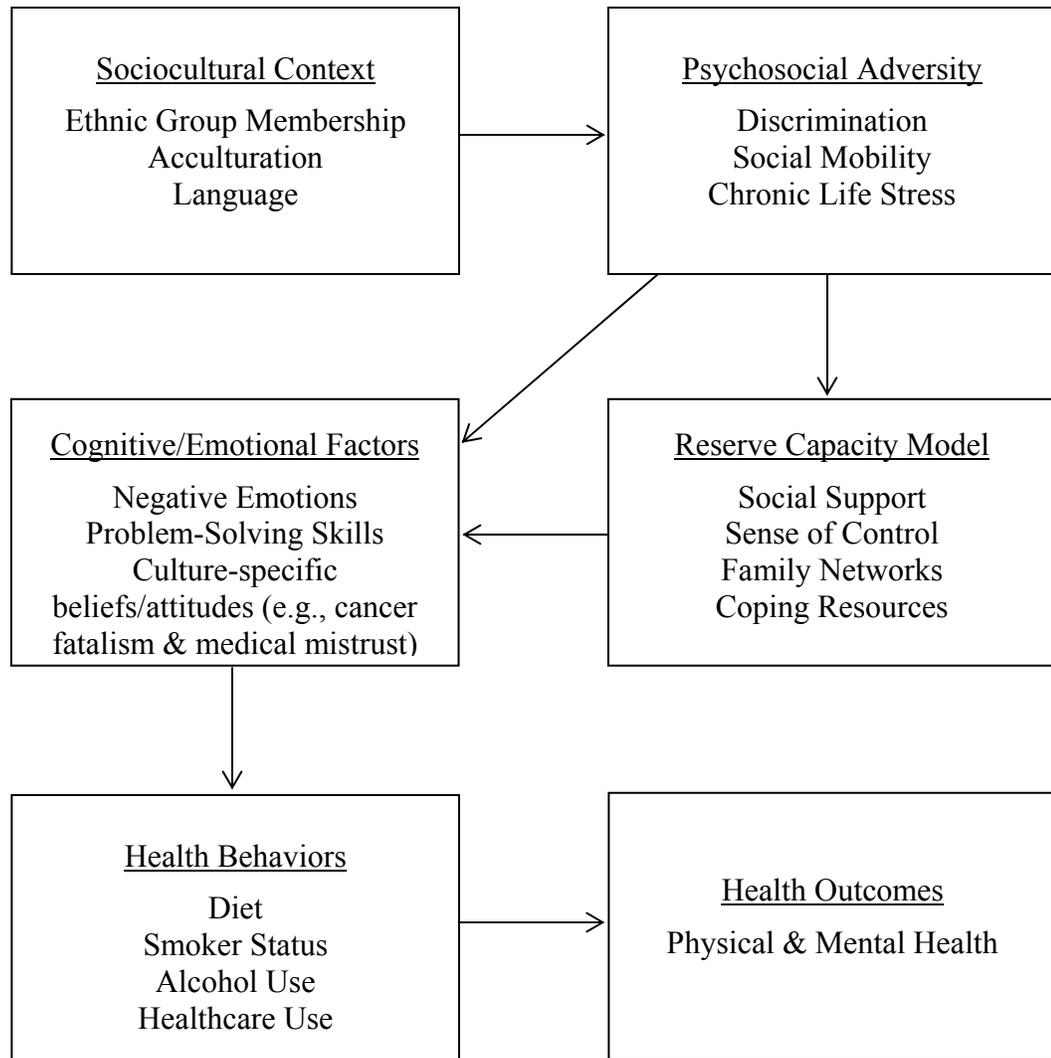
*Model Results for Relationship Between Ethnic Group Membership, Cultural Vulnerability Factors, and Pre-Treatment Quality of Life Outcomes (Specific Aim 4)*

	<i>Physical Well-being<sup>c</sup></i>		<i>Emotional Well-being<sup>d</sup></i>	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>
<b>Covariates</b>				
Language	-.07	.41	-.12	.13
Age	.05	.45	.10	.12
Social status	.03	.61	.04	.56
Religious behavior	-.03	.72	.05	.53
Perceived family support	.07	.30	<b>.18</b>	<b>.00**</b>
PSA	-.01	.85	-.05	.46
Time since diagnosis	.02	.81	.03	.62
Medical comorbidities	-.10	.12	-.01	.89
<b>Direct Effects</b>				
Independent Variable (Ethnic Group Membership)				
African American vs. Hispanic	.06	.54	.10	.27
Mediators				
Medical Mistrust	-.10	.14	<b>-.14</b>	<b>.04*</b>
Cancer Fatalism	-.09	.16	-.07	.28
<b>Indirect Effects</b>				
Independent Variable: African American vs. Hispanic				
Specific Indirect Effect (via Medical Mistrust)	.01	.96	.01	.99
Specific Indirect Effect (via Cancer Fatalism)	.01	.29	.01	.37
Total Indirect Effect	.01	.41	.01	.55

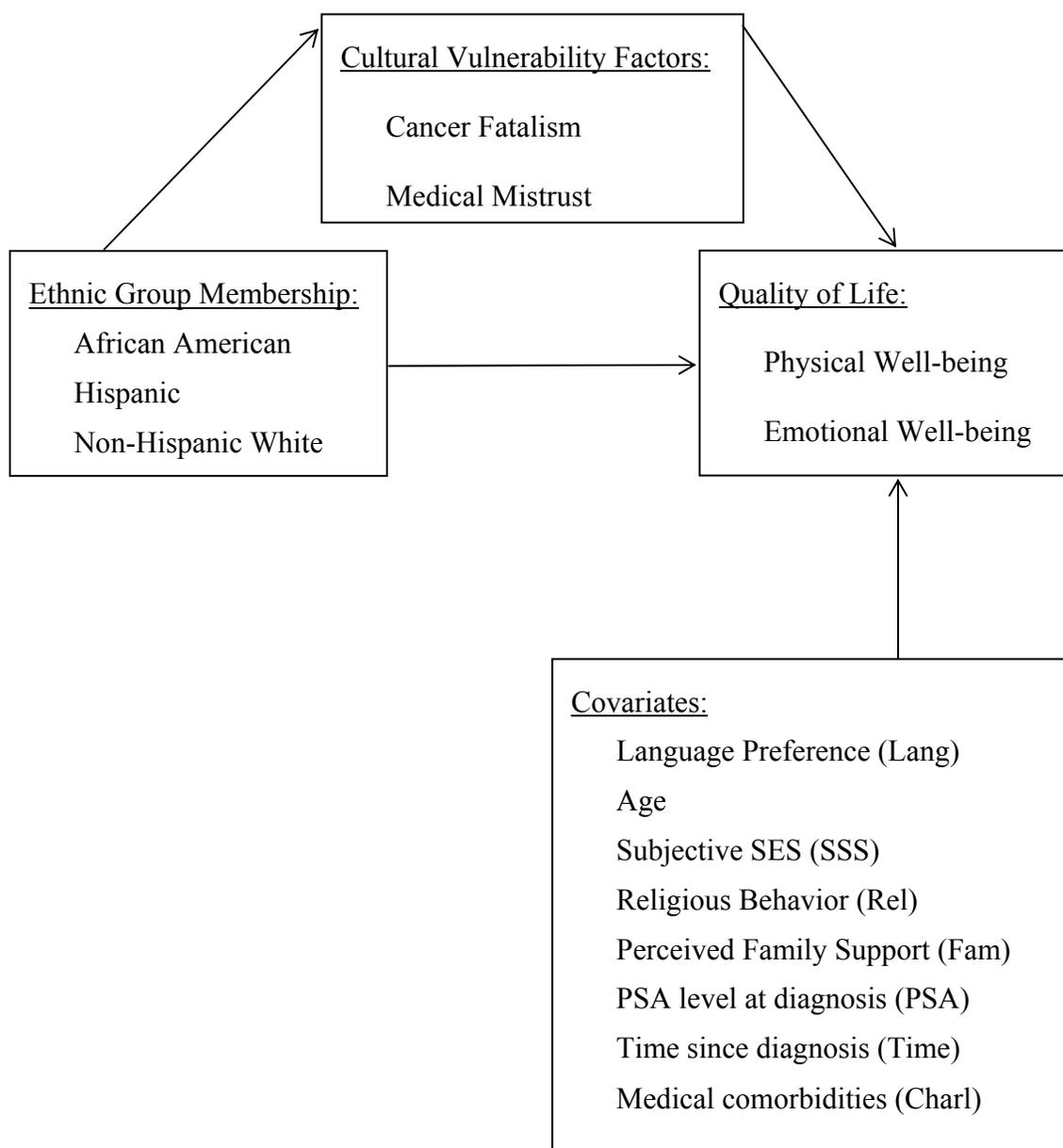
<sup>c</sup>Results for Hypothesis 4c: Ethnic group differences in Physical well-being mediated by Cancer Fatalism and Medical Mistrust (Hispanic Reference Group)

<sup>d</sup>Results for Hypothesis 4d: Ethnic group differences in Emotional well-being mediated by Cancer Fatalism and Medical Mistrust (Hispanic Reference Group)

\* $p < .05$   
\*\* $p < .01$



*Figure 1.* Overall conceptual model that was evaluated in the current study. The diagram illustrates the overall conceptual model that guided the research plan in the present study based on the work of Myers (2009) and Gallo and Matthews (2003) to understand the relationship between race/ethnicity and health outcomes by way of psychosocial, cognitive-emotional, and behavioral pathways. The present study examined the role of culturally-relevant cognitive factors (i.e., cancer fatalism and medical mistrust) on the relationship between ethnic group membership and quality of life outcomes (i.e., physical and emotional well-being) following a prostate cancer diagnosis.



*Figure 2.* Overall model that was evaluated in the current study. The model assessed 1) ethnic group differences in quality of life indexes, 2) ethnic group differences in cultural vulnerability factors, 3) the relationship between cultural vulnerability factors and quality of life indexes, and 4) whether cultural vulnerability factors mediated the relationship between ethnic group membership and quality of life indexes after controlling for socio-demographic and medical-related covariates.

## Hypothesis 1a (non-Hispanic White reference group)

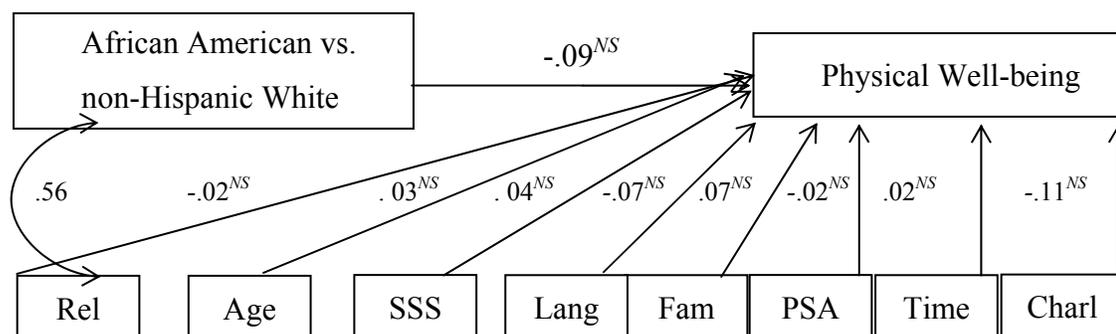
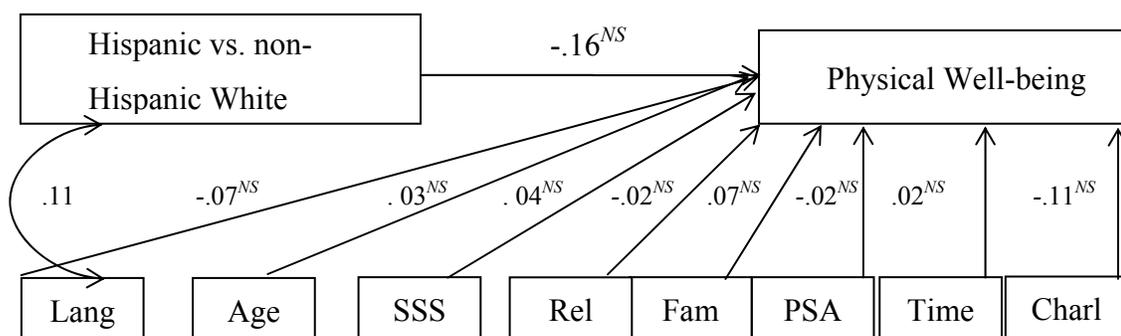
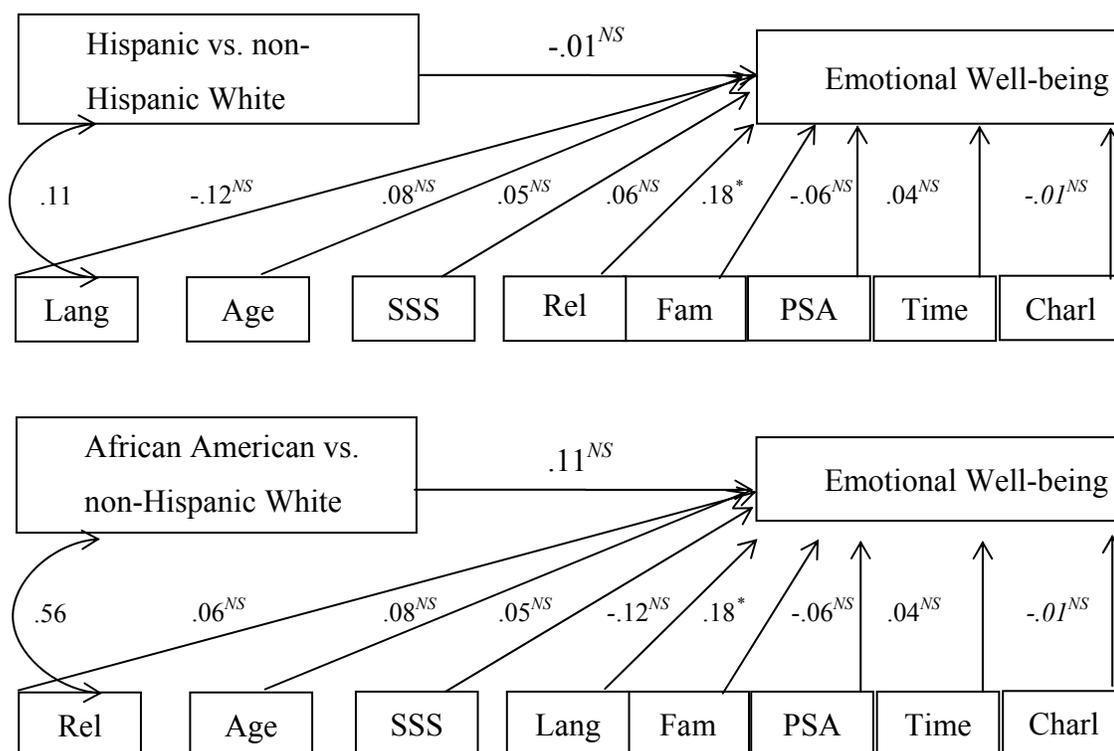
<sup>NS</sup> Not Significant

Figure 3. Statistical model for Specific Aim 1 (Hypothesis 1a) which assessed ethnic group differences in physical well-being after controlling for socio-demographic and medical-related covariates using non-Hispanic White as the reference group. The figure depicts a covariance between the Hispanic dummy-coded variable and language preference as well as a covariance between the African American dummy-coded variable and religious behavior.

## Hypothesis 1b (non-Hispanic White reference group)



\*  $p < .05$   
<sup>NS</sup> Not Significant

Figure 4. Statistical model for Specific Aim 1 (Hypothesis 1b) which assessed ethnic group differences in emotional well-being after controlling for socio-demographic and medical-related covariates using non-Hispanic White as the reference group. The figure depicts a covariance between the Hispanic dummy-coded variable and language preference as well as a covariance between the African American dummy-coded variable and religious behavior.

## Hypothesis 1c (Hispanic reference group)

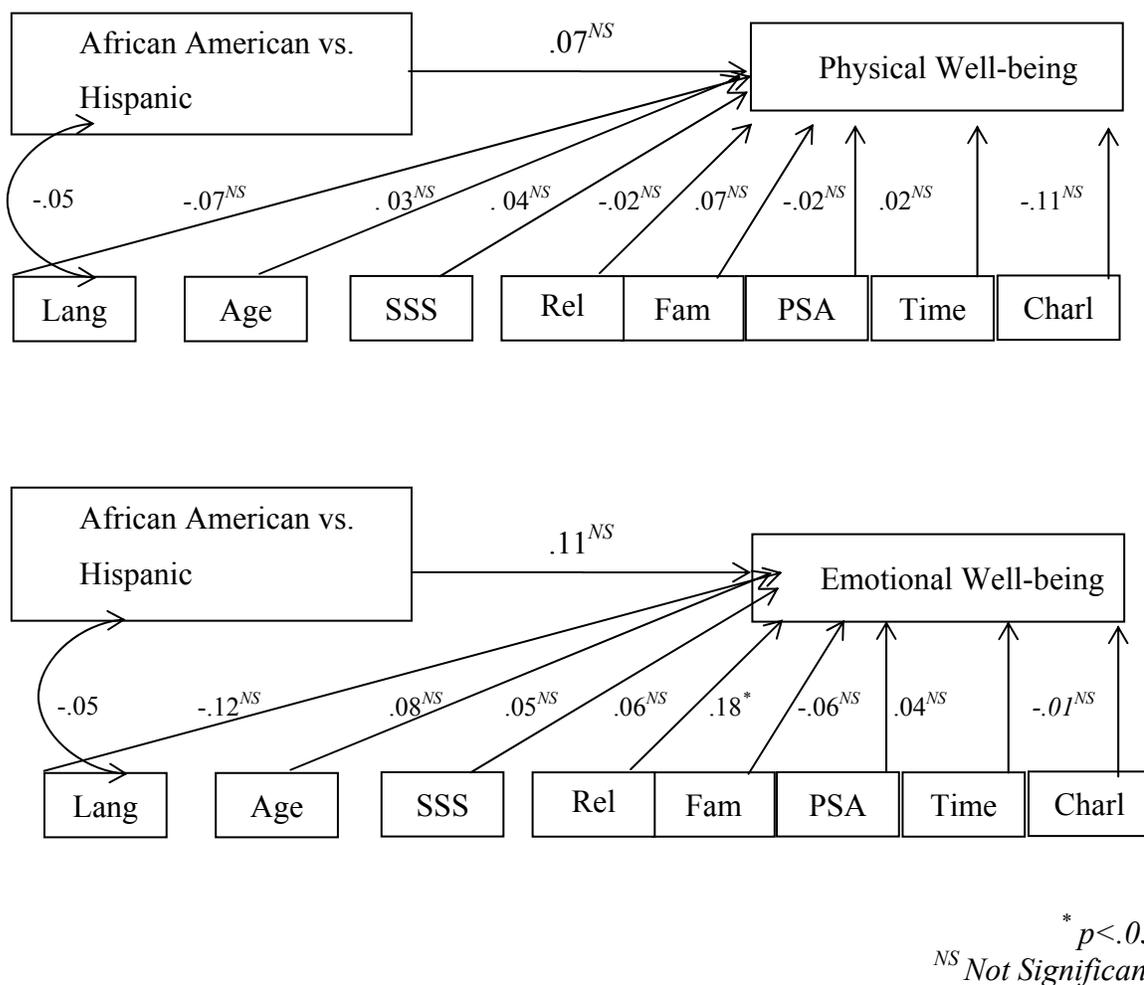
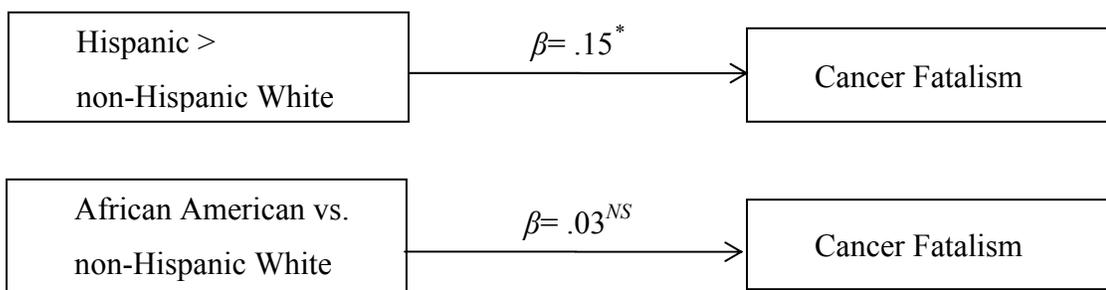
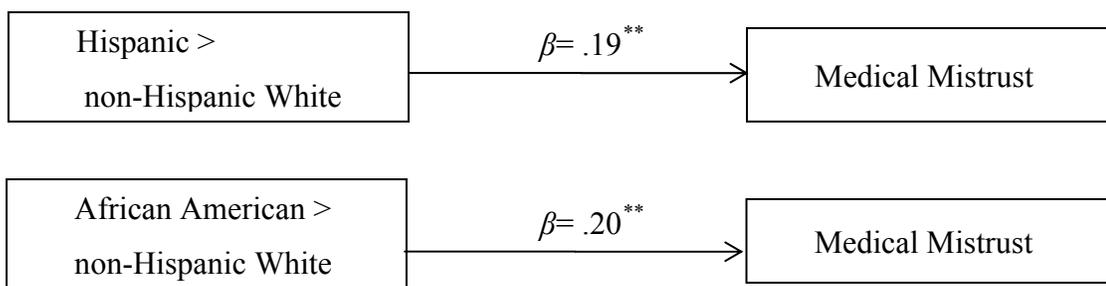


Figure 5. Statistical model for Specific Aim 1 (Hypothesis 1c) which assessed ethnic group differences in physical and emotional well-being after controlling for socio-demographic and medical-related covariates using Hispanic as the reference group. The figure depicts a covariance between the African American dummy-coded variable and language preference.

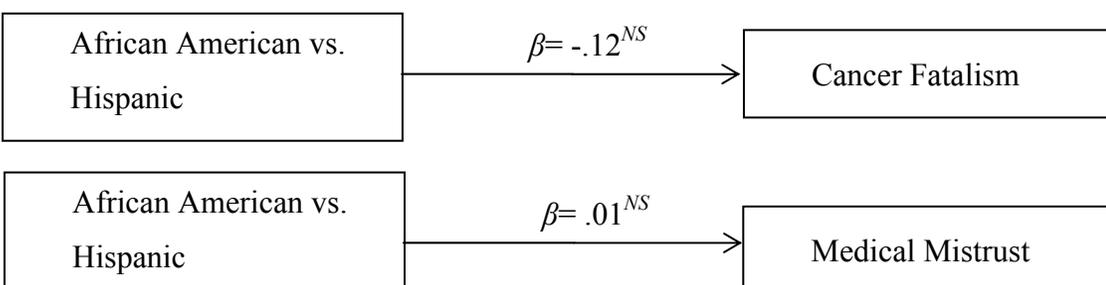
## Hypothesis 2a (non-Hispanic White reference group)



## Hypothesis 2b (non-Hispanic White reference group)



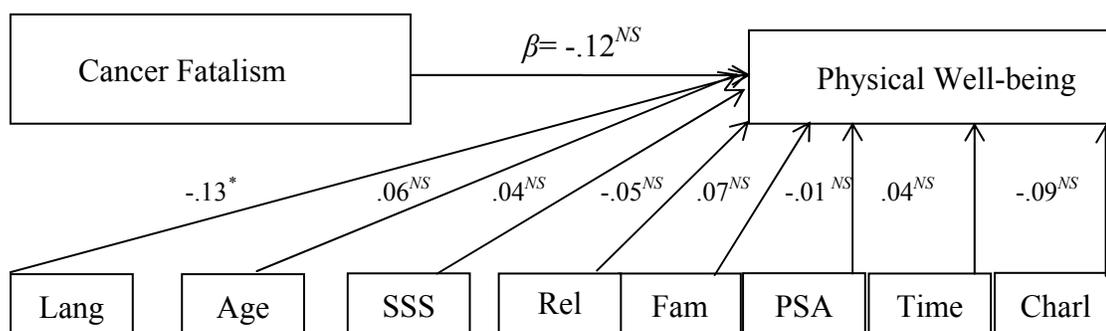
## Hypothesis 2c (Hispanic reference group)



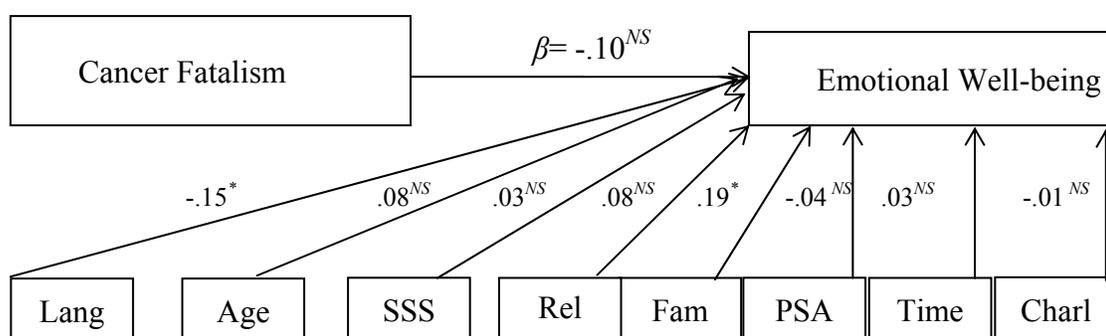
\*  $p < .05$   
 \*\*  $p < .01$   
<sup>NS</sup> Not Significant

Figure 6. Statistical model for Specific Aim 2, which assessed ethnic group differences in cultural vulnerability factors.

Hypothesis 3a.



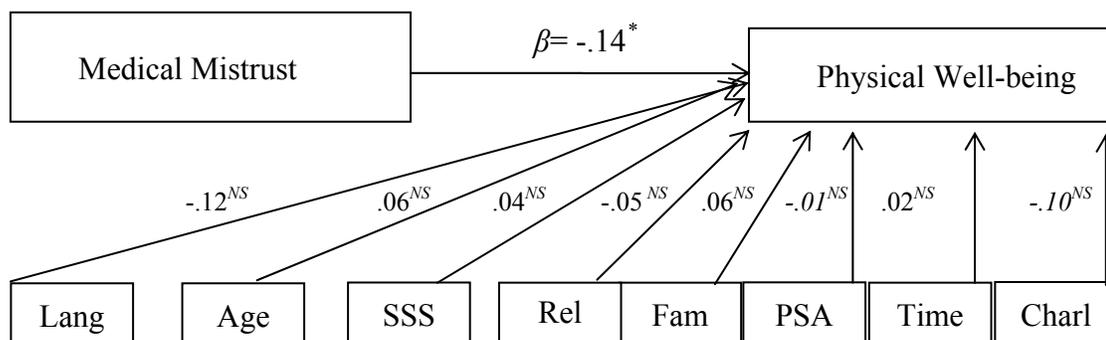
Hypothesis 3b.



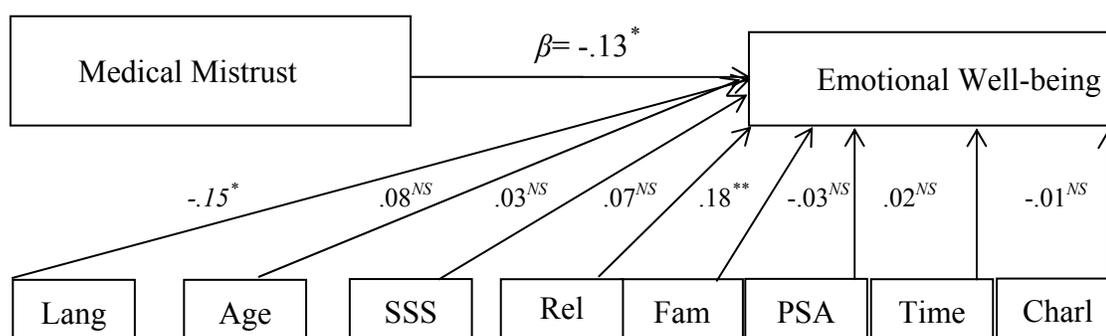
\*  $p < .05$   
<sup>NS</sup> Not Significant

Figure 7. Statistical model for Specific Aim 3 (Hypotheses 3a and 3b), which assessed the relationship between cancer fatalism and quality of life indexes after controlling for socio-demographic and medical-related covariates.

Hypothesis 3c.

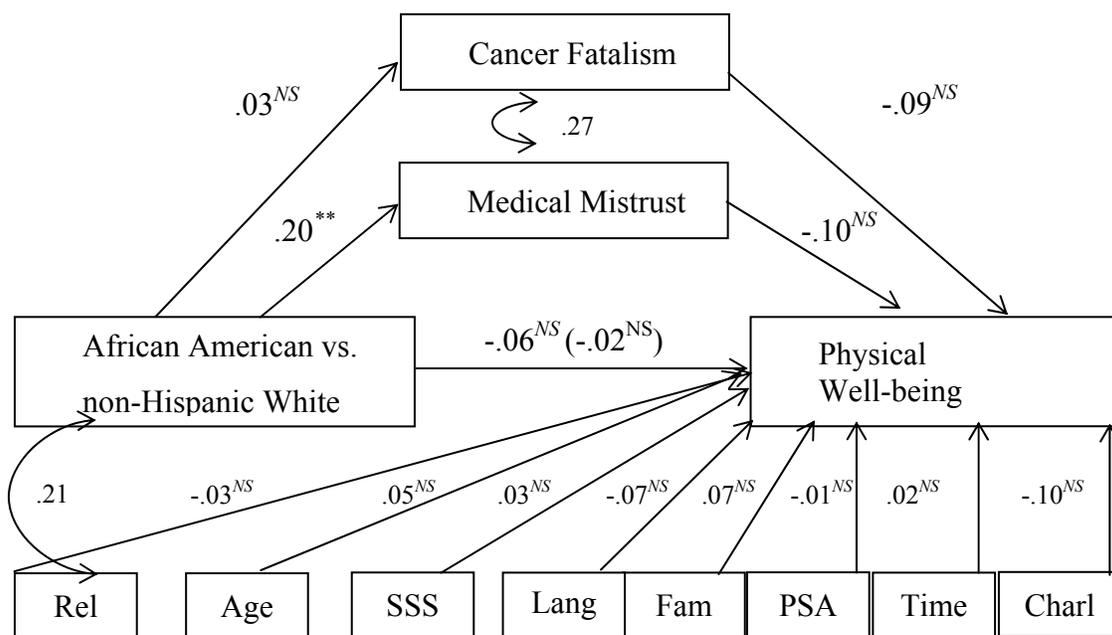
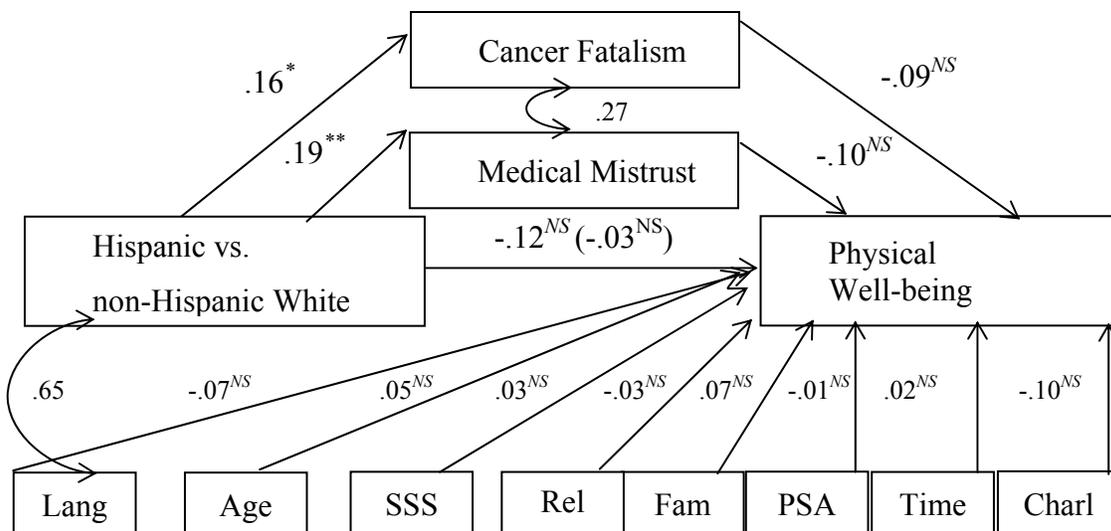


Hypothesis 3d.



\*  $p < .05$   
 \*\*  $p < .01$   
<sup>NS</sup> Not Significant

Figure 8. Statistical model for Specific Aim 3 (Hypotheses 3c and 3d), which assessed the relationship between medical mistrust and quality of life indexes after controlling for socio-demographic and medical-related covariates.

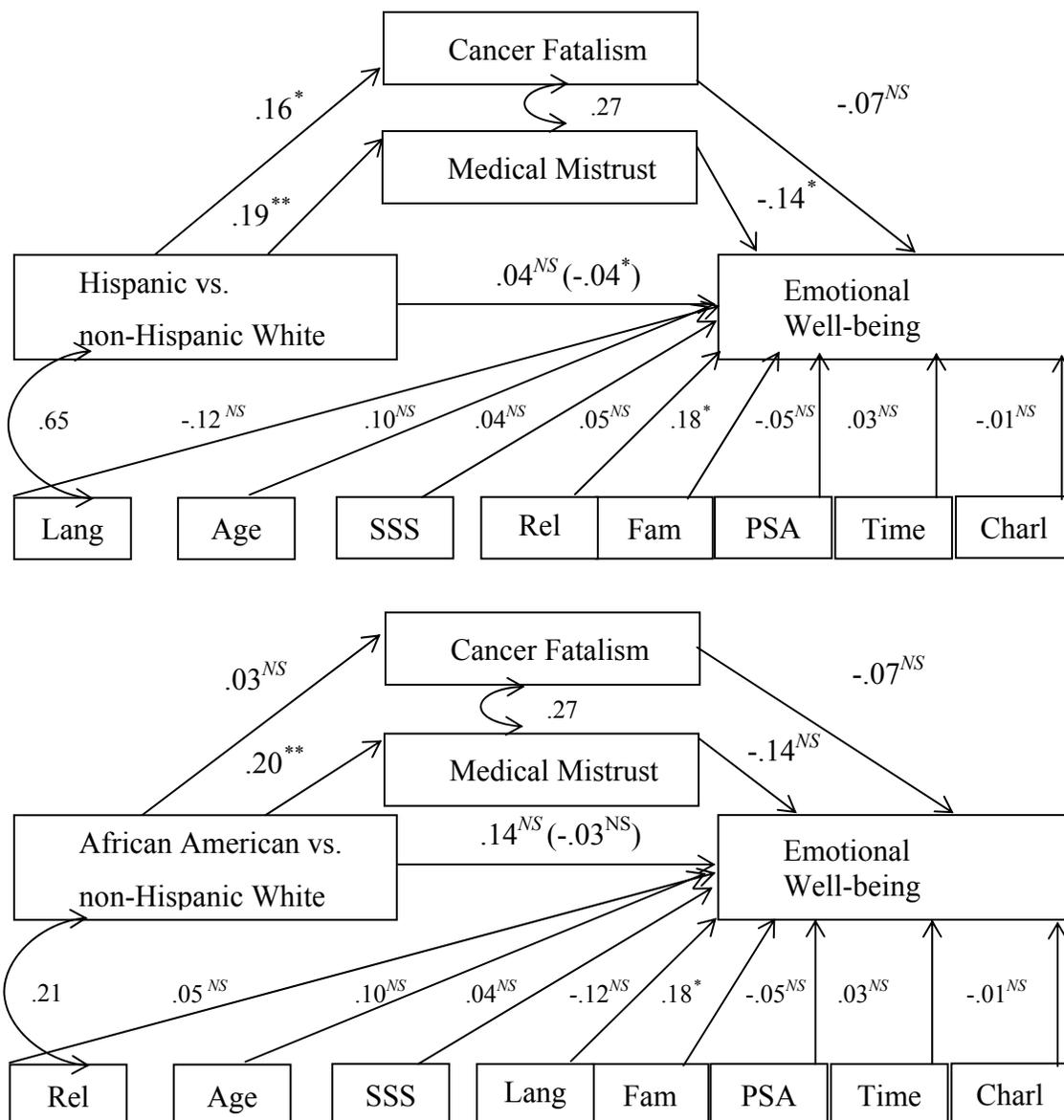


\*  $p < .05$   
 \*\*  $p < .01$   
 ^NS Not Significant

( ) Total Indirect effect

Chi-square test of model fit ( $\chi^2 = 13.36, p = .65$ ); CFI=1.00, RMSEA= 0.00; SRMR= 0.02

Figure 9. Statistical model for Specific Aim 4 (Hypothesis 4a), which assessed whether cultural vulnerability factors mediated the relationship between ethnic group membership (non-Hispanic White reference group) and physical well-being after controlling for socio-demographic and medical-related covariates. The figure depicts a covariance between the Hispanic dummy-coded variable and language preference as well as a covariance between the African American dummy-coded variable and religious behavior.



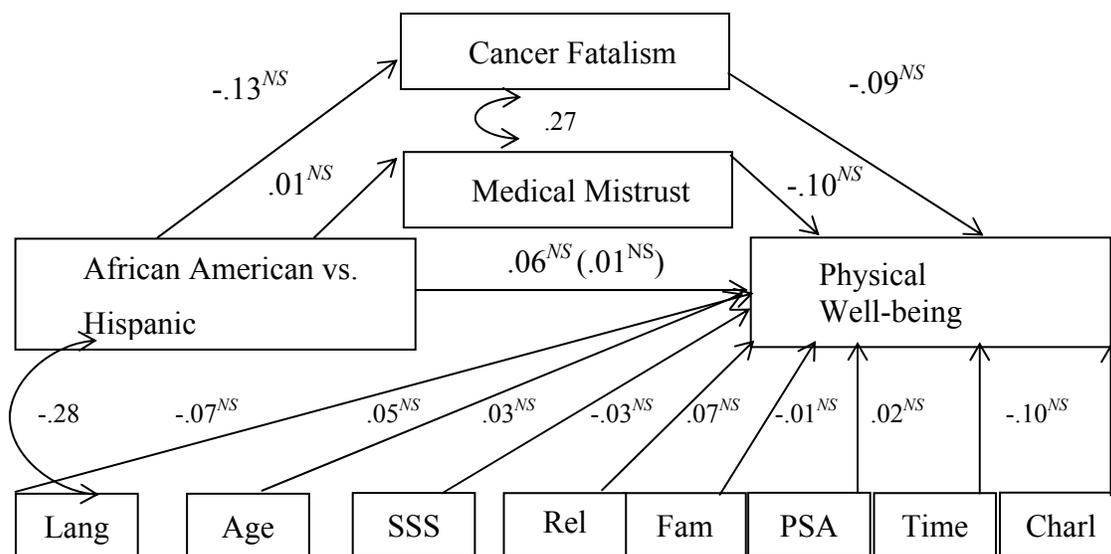
\*  $p < .05$   
 \*\*  $p < .01$   
<sup>NS</sup> Not Significant

( ) Total Indirect effect

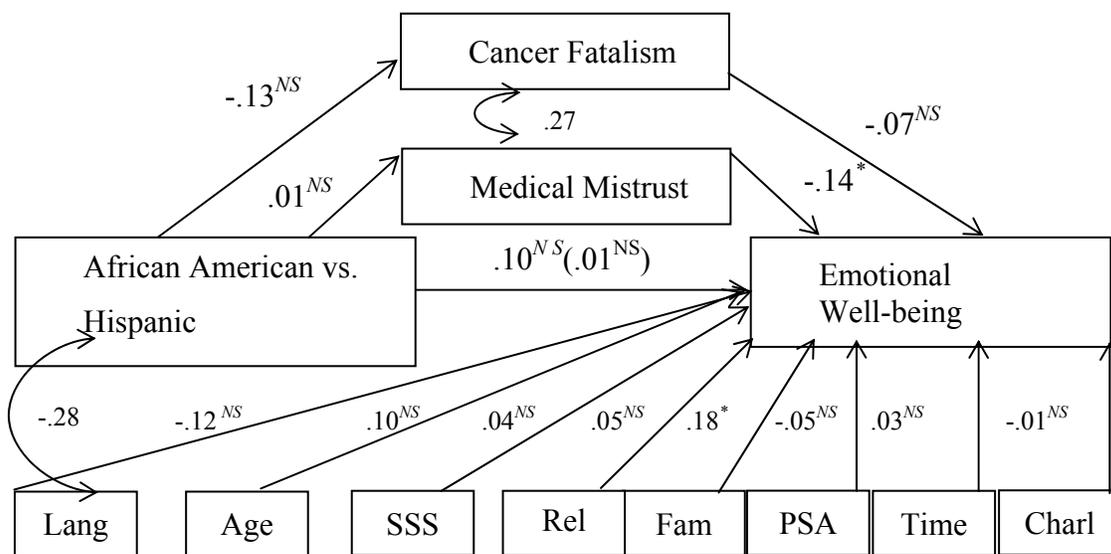
Chi-square test of model fit ( $\chi^2 = 13.23, p = .66$ ); CFI = 1.00; RMSEA = 0.00; SRMR = 0.02

$R^2 = .104, p = .004$

Figure 10. Statistical model for Specific Aim 4 (Hypothesis 4b), which assessed whether cultural vulnerability factors mediated the relationship between ethnic group membership (non-Hispanic White reference group) and emotional well-being after controlling for socio-demographic and medical-related covariates. The figure depicts a covariance between the Hispanic dummy-coded variable and language preference as well as a covariance between the African American dummy-coded variable and religious behavior.



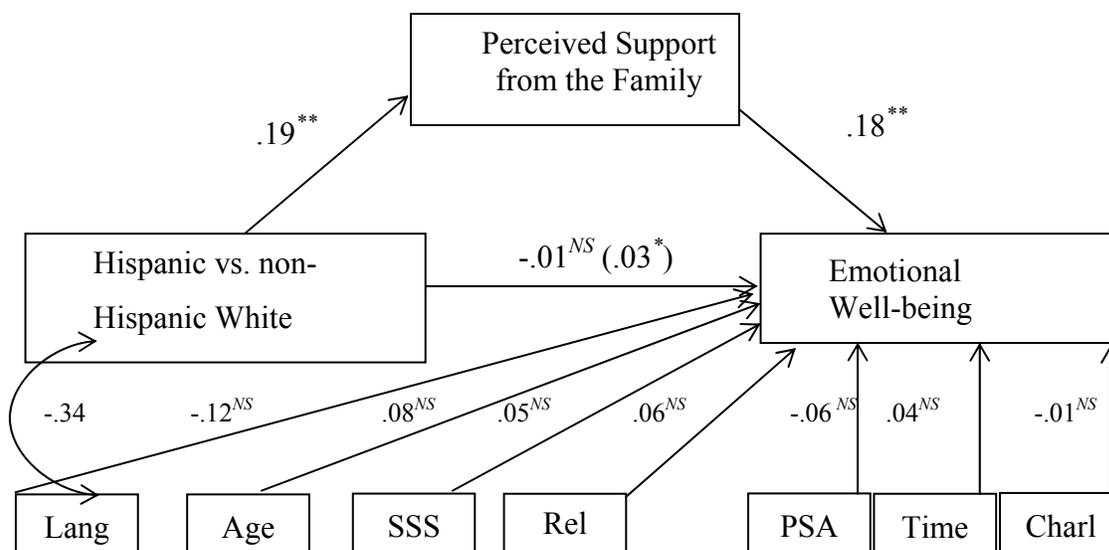
Chi-square test of model fit ( $\chi^2 = 13.36, p = .65$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.02



Chi-square test of model fit ( $\chi^2 = 13.23, p = .66$ ), CFI=1.00, RMSEA= 0.00, SRMR= 0.02

\*  $p < .05$   
 \*\*  $p < .01$   
 ^NS Not Significant  
 ( ) Total Indirect effect

Figure 11. Statistical model for Specific Aim 4 (Hypotheses 4c and 4d), which assessed whether cultural vulnerability factors mediated the relationship between ethnic group membership (Hispanic reference group) and quality of life indexes after controlling for socio-demographic and medical-related covariates. The figure depicts a covariance between the African American dummy-coded variable and language preference.



\*  $p < .05$   
 \*\*  $p < .01$

<sup>NS</sup> Not Significant

( ) Total Indirect effect

Chi-square test of model fit ( $\chi^2 = 12.19, p = .09$ ), CFI = 0.77, RMSEA = 0.05, SRMR = 0.02

$R^2 = .077, p = .016$

Figure 12. Statistical model for the exploratory analysis that assessed whether perceived support from the family mediated the relationship between ethnic group membership (Hispanic vs. non-Hispanic White) and emotional well-being after controlling for socio-demographic and medical-related covariates. The figure depicts a covariance between the Hispanic dummy-coded variable and language preference.

